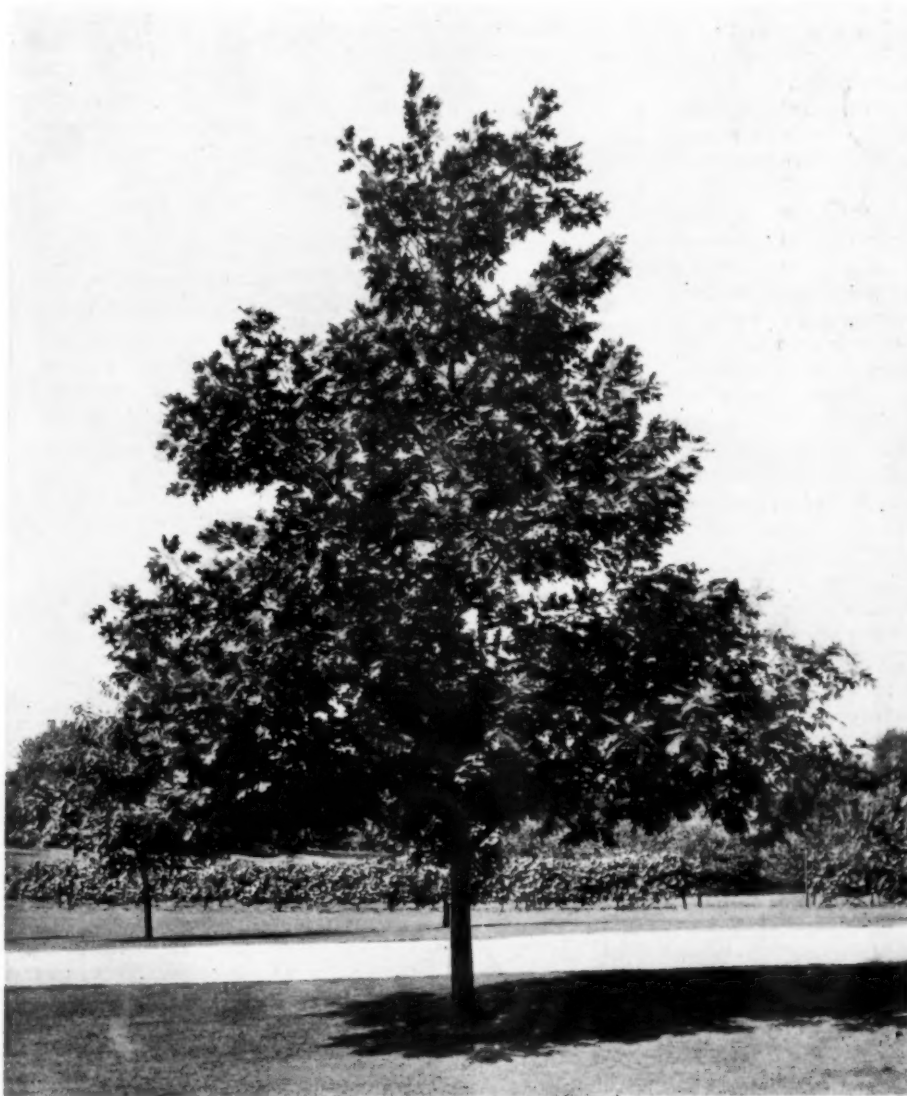


AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

MAY 15, 1941



Quercus Borealis Maxima (Rubra)

Diagnosis of Insect Injury
Landscape Planning and Planting
Sphagnum Prevents Damping-off Losses
New Propagation Methods in Practice

AMERICAN NURSERYMAN

F. R. KILNER, Editor

Editorial

COVER REPRINTS.

Over 140 pictures of plants have appeared on the front cover of this magazine in the past few years. Inquiries have been received from time to time about reprinting them in some sort of book form. As it seems about time that this should be undertaken, the editor invites advice as to the most useful style.

For a loose-leaf binder, one picture might be shown on a sheet, with the cover illustration comments printed on the reverse side. This would make possible additions in the binder from year to year. Inexpensive ring binders might be employed for groups of shrubs or trees or evergreens or vines, so that nurserymen or their salesmen might exhibit them to clients. For persons who want one complete permanent set for their own reference, a somewhat more expensive leather binder might be provided. If this suggestion is most practical, additional cover illustrations would be reprinted about once a year at small cost for addition in the binders.

Another scheme would be to print in booklet form, like the magazine, but with a stiff paper binding, a series of shrubs, a series of trees, a series of evergreens, etc., perhaps with the comments on facing page, instead of the reverse. First cost of such booklets would be less, but addition to the series would be at greater intervals, and a complete index as further booklets appeared would be less easy.

Will you write the editor in what style the reprints would best serve your purpose, whether you would use one or a number of copies, and what would be a suitable price?

If you have other ideas, please offer them now. Write a letter to the editor, or just a post card if you're busy. But please let us know what you would like.

THE new Texas law increases the load limit on trucks from 7,000 to 38,000 pounds. Earlier in the year the Tennessee state limit was increased from 24,000 to 30,000.

The Mirror of the Trade

KEEP 'EM THINKING OF YOU.

When a discussion of advertising turns to a consistent, continuous, year-around program, many nurserymen are likely to respond with excuses like the Irishman's about repairing his roof. In the busy spring and autumn seasons, a nurseryman is too occupied with making deliveries to think about advertising and doesn't want it then; at other seasons he doesn't see the use of advertising when he cannot make deliveries.

There is a certain similarity between nurserymen's position and the present situation of manufacturers of machine tools and other products so necessary for defense production that their prospective output is sold up for months to come. Those manufacturers are thinking about the advertising program they have carried in normal times, and from their discussion of the problem has come an answer, expressed in the following paragraphs from a talk by the official of a large machine tool company, worth reading by others whose sales fluctuate widely from season to season or year to year:

"Any company which is to endure, any company which lays its plans over a long period of years, knows that while today is important, survival is always a matter of tomorrow. And when you study the history of any company that has survived over the years, through thick and thin, you find that this company has been successful in two respects, first, in maintaining quality of product, and second, in maintaining human relationships.

"Goods are not bought and sold by adding machines. They are bought and sold by people. Human relationships are the foundation for all business relationships. And advertising and selling are methods of maintaining human relationships.

"Can a business which is filled to capacity today afford to neglect the human relationships upon which it must depend for its business of tomorrow?

"First, let's consider advertising. Of course if advertising is to be viewed merely as a stimulus to sales, it might seem quite logical for a company to

discontinue advertising at a time when a backlog of orders taxes the capacity of a company's plant.

"But the moment advertising is viewed in its broader sense—as a means of maintaining contact with people, a means of sustaining human relationships—it becomes evident that there remains a real job for advertising to do.

"Since product promotion is in such a period unnecessary, forget this angle. Certainly there is no need to send a prospect a series of direct-mail pieces extolling the advantage of your product when you couldn't make delivery of the product if he should want it. Neither would there be any object in continuing the product promotion type of copy in magazine advertising.

"There are plenty of other things to talk about. Remember, once you conceive of advertising as a means of retaining contacts with customers and friends, you can talk about practically anything you choose which may be of interest to those customers and friends.

"Your purpose, remember, is to keep these people thinking in the right way about your company.

"First of all, you want to be sure that they don't forget you. You want to make certain that whenever a situation arises, in their businesses, which involves a product of the type made by your company, customers and prospects will always think of your company first.

"This is vital—because no matter how great may be the rush of orders today, tomorrow will be a different story."

THE annual exhibition of the American Peony Society will be held in cooperation with the Syracuse flower festival, June 20 and 21, in the horticultural building at the New York state fairgrounds, Syracuse, N. Y.

JAPANESE beetle administrative instructions were modified May 1 by supplement 4 to B. E. P. Q. 499, covering federal regulations as to lead arsenate treatment of potting soil, soil in and around coldframes and heating-in areas and the treatment of plants before digging.

AMERICAN NURSERYMAN

[Registered U. S. Patent Office]

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

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MAY 15, 1941

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Prepare your advertisement now for the

PRE-CONVENTION NUMBER

- COVERS IN FULL COLOR -

Issued July 1 — forms close June 25

EARLY-BIRD NUMBER

Issued June 15 — forms close June 10

Announcements of exhibits, or representatives to be in attendance at the convention, will help you book more and better orders for the season ahead.

Diagnosis of Insect Injury

By Clyde C. Hamilton

Before a medical doctor can prescribe intelligently for a disease, it is universally recognized that he make a correct diagnosis of the cause of the ailment. His first step in the treatment is to identify the organism or cause responsible for the trouble. Then and only then can he draw on his store of knowledge and prescribe what should be done to remedy the condition. A similar situation exists in the control of insect pests. First identify the species of insect, second study its life history and habits, particularly as related to control measures, and then determine what control measures are best adapted to the species of insect and the existing conditions.

One's first reaction might be, all that is necessary is to know whether the insect is eating the plant tissues, in which case use an arsenate of lead spray, or whether it is sucking out the plant juices, in which case use a contact spray, such as nicotine and soap. Most of the problems of insect control, however, are not nearly so simple. It is necessary to know the name of the insect (scientific and common), in order to look up the available information on its life history, its habits and the methods of controlling it.

Just how can insects and their injury to plant or animal products be identified? Broadly speaking, there are two methods. One is used by the trained systematist, in which the morphological structures on the insect's body are used in describing it and in constructing keys for identification. These structural characters are definite for different species, but are not readily observed except to the trained specialist. They are, therefore, not easily used by the layman.

The second method of identifying insects is that used by many economic entomologists and others interested in insect control. It is based upon such things as the name of the host which is attacked, the character of the injury, the time it occurs and the most obvious structural characters of the insect. This method of insect identification is rapid, easy and read-

ily workable for the most common economic species. It can also be used for determining what insect may be causing injury even though the insect may not be present.

These are a few fundamental facts one should know about insects to assist in their identification. One

should be able to recognize the different stages of growth of an insect and some of its gross structural characters, such as the different body regions, as the head, the thorax and the abdomen; the appendages, such as the antennae, the wings, the legs, the pseudo or false legs, and the setae or hairs, and the breathing openings, called the spiracles. Several different kinds of insects and some of their structural characters are shown in figure 1.

If one knows how and has the proper publications it is not a difficult task to identify the cause of most insect injuries. It is relatively easy to distinguish between the injury caused by insects eating the leaf tissues, those sucking out plant juices

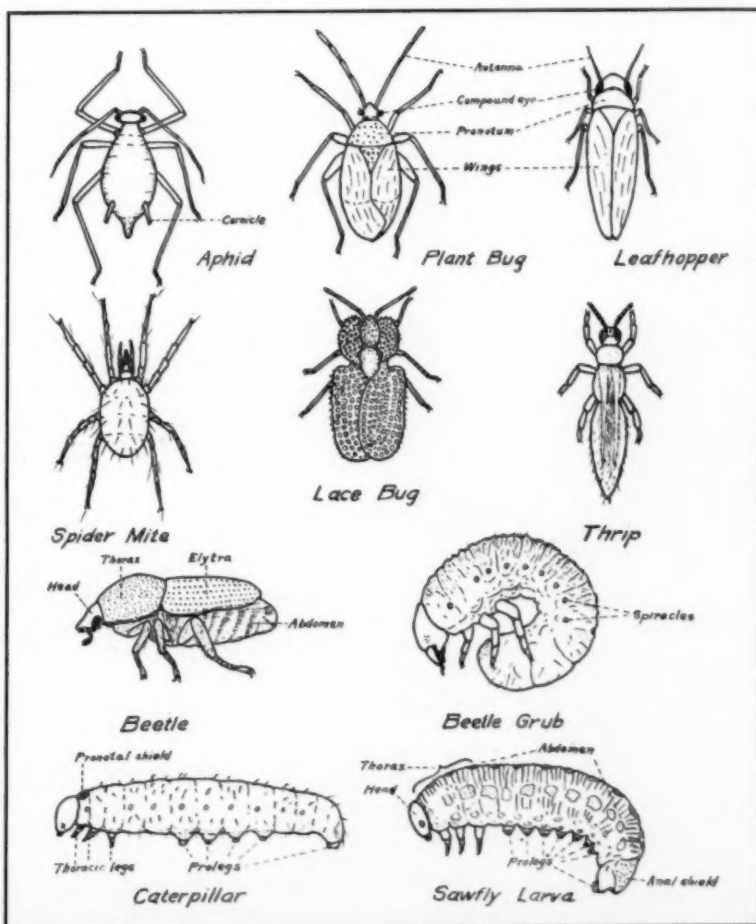


Figure 1—Examples of insects showing characteristic shapes and structure.

from leaves, twigs or fruit, those mining in the leave, or those boring in the stems, limbs or trunk of plants. However, the injury caused by many insects is quite specific, and when this is taken in conjunction with the host plant and the markings of the insect, definite characters for identification are available.

For example, on elm the Japanese beetle feeds from the upper surface, eating the leaf tissues between the veins, and when the injury is severe it gives a beautiful skeletonized lace-like effect. The elm leaf beetle also feeds on the upper surface, eating somewhat rectangular holes about one-fourth inch long, while the larvæ of the elm leaf beetle feed on the lower leaf surface, leaving most of the upper surface. When severe their injury also gives a skeletonized lace-like effect. Cankerworm larvæ and similar caterpillars, when small, eat irregular holes in the leaves and, when larger and numerous, consume most of the leaf except the principal leaf veins. It is thus not too difficult to identify the insects eating the foliage of the elm or other plants by associating this injury with the host and the markings of the insects.

It is sometimes more difficult to distinguish between the injury caused by different sucking insects. This is often possible, and the following examples distinguish between injuries caused by spider mites, leaf hoppers, lace bugs and thrips. All of these



Figure 2—Norway spruce gall aphid. Note short, pineapple-shaped galls.

pests feed on the plant juices, resulting in injury to the chlorophyll and a loss of the green color. The general pattern of this type of injury, together with the characteristic markings of the insect, makes identification possible. Since many insects are limited in their feeding to specific hosts, identification of the group and of the species of insect may be made.

Spider mites are usually found on the lower surface of the leaf, feeding rather generally over the entire area or sometimes most heavily along the principal veins. Their injury shows on the upper surface of deciduous leaves as a fine, rather uniform, grayish-green stippling, which often turns brown in heavy infestation or late in the season. On the lower surface of the leaf usually may be found the small, four-legged mites, their small, round and usually reddish eggs, or the white, glistening empty eggshells and sometimes considerable fine webbing.

Leaf hoppers also feed on the lower surface of the leaves. Their injury shows on the upper surface of older leaves as grayish-green discolored specks, which are somewhat larger and coarser than those caused by spider mites. The injury is rather general over the leaves. On the lower surface may be found the usually light-colored, slender, active insects, not more than one-eighth inch long when grown, or the white cast skins of the young.

Lace bugs also feed principally on the lower surface of the leaves, usually in groups, so that their injury shows on the upper surface in more spotty areas than that of spider mites or leaf hoppers. On the lower surface may be found the flat insects, not more than one-eighth inch long and with lacelike wings, the young spiny nymphs, their cast skins or black spots of excrement voided by the nymphs or adults.

Thrips may feed on the upper or lower leaf surface. They rupture the surface and suck or lap up the plant juices. The injured places take on a whitish, glistening appearance, caused by the air in the injured and empty plant cells. Superficially, thrips injury somewhat resembles that caused by leaf hoppers or lace bugs, but close examination with a lens will show the ruptured plant cells. Their feeding is often in spots, and usually there are small, black spots of excrement on the injured areas. Thrips



Figure 3—Blue spruce gall aphid. Note the long gall shape.

are less than one-eighth inch long, slender, pointed at both ends and moderately active.

Those insects that feed on a number of different kinds of plants are more difficult to identify than are those that feed on only one or two kinds of plants. For example, the Japanese beetle and cankerworms feed on most of the common deciduous shade trees, while the elm leaf beetle feeds only on elm. The common name "elm leaf beetle" naturally indicates that it is a pest of elm, while the names "Japanese beetle" and "cankerworms" do not indicate the particular host. In the case of these general feeders it may be necessary to look up the insects attacking several of the possible host plants before an identification and description of the insect can be found. The subject index of any publication should be used freely in identifying insects and their injury. Good illustrations of the insect and its injury are also useful and often tell more than a whole paragraph of descriptive matter. For example, the injury of the two species of spruce gall aphids, *Adelges abietis* Kalt., occurring principally on the Norway spruce, and *Adelges cooleyi* Crt., attacking principally the Colorado blue spruce, may be easily distinguished by the shape of the gall-like growths, as illustrated in figures 2 and 3. The first is shaped somewhat like a pine-

apple and is but little longer than broad, while the second is from two to three times as long as broad.

Examples illustrating the characteristic injury of different species of insects might be continued indefinitely. The writer has used the method of insect identification just discussed for a number of years in classes in economic entomology and before groups of nurserymen, shade tree sprayers and gardeners and finds that it is entirely practical and usually intensely interesting to the students. The identification of the insect and its injury is merely a means to find out the control measures and should be made as easy as possible.

WHITE-FRINGED BEETLE.

According to the eighth revision of B. E. P. Q. 485, effective May 1, nursery stock and other plants which are free from soil, when sanitation practices are maintained to the satisfaction of the inspector, may be moved interstate from regulated parts of Mobile county, Ala.; Escambia county, Fla., and the parishes of East Baton Rouge, Jefferson, Plaquemines, Saint Bernard and Orleans, including the city of New Orleans, in Louisiana. Under the modification of the federal regulations, certification requirements on such stock are waived until February 1, 1942. Plants with soil attached remain under restriction.

NEW YORK PROMOTIONS.

Announcements of promotions at the New York state college of agriculture, at Ithaca, include that of Dr. D. S. Welch to professor of plant pathology and forest pathologist in the station. He has been in charge of investigations of the Dutch elm disease since the college of agriculture started the work in 1933-34.

Leo A. Muckle becomes professor in extension service. He is assistant state leader of county agricultural agents.

Among the advancements from assistant professor to associate professor is that of Joseph P. Porter in the department of ornamental horticulture.

The title of Robert T. Clausen, assistant professor of botany, was changed to professor of botany in the Bailey Hortorium, while that of George H. M. Lawrence was changed to assistant professor of botany and horticulture in the Bailey Hortorium.

AMERICAN ASSOCIATION OF NURSEYMEN

RICHARD P. WHITE,
EXECUTIVE SECRETARY



636 SOUTHERN BLDG.,
WASHINGTON, D. C.

GROW FOR GOVERNMENT.

With the A. A. N. news-letter for May 1 members received a mimeographed copy of a letter from August E. Miller, chief of the regional nursery division of the soil conservation service, Dayton, O., inviting estimates from nurserymen as to the cost to the soil conservation service for delivery in the fall of 1941 or spring of 1942 of certain items of forest tree stock as transplants or seedlings. This is not a request for firm bids, but an exploratory inquiry as to the likelihood of having such stock grown for the service in commercial nurseries. The trade thus is in position to indicate its interest in producing stock of the type grown in some government nurseries.

Commenting in the news-letter on this letter of inquiry, Secretary Richard P. White makes this statement to members:

"For three years we have been complaining energetically against government nurseries. Last year the A. A. N. obtained authorization in Congress for the S. C. S. and other agencies to contract for not more than three years in advance with commercial nurseries. The soil conservation service is making use of this contractual authority and wishes to extend its use in 1941-1942. Now it's up to us to deliver.

"April 18, a mimeographed letter left the Dayton, O., regional office of the S. C. S. listing the stock it would like to contract for 1941-1942, for use in Michigan, Indiana, Kentucky, Tennessee and Ohio. The stock may be grown within limitations in the following states: Wisconsin, Minnesota, Michigan, Pennsylvania, New York, Indiana, Illinois, Ohio, Kentucky, Tennessee, Missouri, Arkansas, Mississippi, Alabama, Georgia and West Virginia. The grades specified are A. A. N. grades.

"If interested in bidding, communicate at once with A. E. Miller, chief, regional nursery division, soil conservation service, Dayton, O. If interested in bidding on 1942-1943

requirements, but not on 1941-1942, write to the same address and make this fact known. Quantities needed for fall 1941 and spring 1942 deliveries are relatively small and may be met out of existing stocks. A total of 1,960,000 are called for in the following species: Jack pine, shortleaf pine, pitch pine, loblolly pine, black locust and bald cypress, mostly 1 or 2-year seedlings.

"If sufficient interest is expressed, it is the intention of the S. C. S. to obtain bids leading to the development of contracts. A performance bond is required in all contracts. This will eliminate bids from subsidized state nurseries, as it has been our experience up to this time that a state or any agency thereof is unable to execute a performance bond.

"Now is the time to indicate your interest in producing this stock on government contract. We have made contracts possible. Will the nursery trade now deliver, or have we been barking up the wrong tree?"

NEW PLANT PATENTS.

The following plant patents were issued April 29, according to Rummeler, Rummler & Davis, Chicago patent lawyers:

No. 463. Carnation plant. Philip J. Goebel, Des Peres, Mo. A new and distinct variety of carnation plant characterized particularly by its stout, heavy stems; its large, thick, bulging buds, and its very large full-petaled, high-centered blooms, having a uniform brilliant scarlet-red to spectrum-red color which it retains regardless of weather conditions.

No. 464. Rose plant. Frederick H. Howard, Montebello, Cal. A new and distinct variety of hybrid tea rose plant, characterized particularly by its strong growth; its handsome leathery foliage; its bud of good long-pointed form, and its blooms, having a loose high-centered form and petals with wavy and notched edges and a distinctive combination of colors from geranium pink to Capucine orange.

No. 465. Shasta daisy. Horace P. Read, Brundall, near Norwich, England, assignor to the Conard-Pyle Co., West Grove, Pa. A new and distinct variety of Shasta daisy characterized as to novelty by the color of its foliage and the large-size, fully double form of bloom borne on single stout stems, said flower being white in color, tinged at the center with light green until mature, when said green disappears.

Landscape Planning and Planting

By Joseph P. Porter

In last month's article we noted that landscape planning was based upon the idea of rendering services to a client, that it entails a complete study of the entire property in the light of the client's needs and desires, that it is the establishment of a sensible and comprehensive program for the development and planting of the land.

The main idea back of landscaping is not to sell plants, but first to educate, then to sell ideas and finally to sell service. The landscape man's primary object is to convince Mr. Average Citizen that the complete home landscaping idea has merit and value. If a plan can be made for him and if he can be persuaded to work toward its fulfillment, doing a little each season, the ultimate goal will be achieved. Think what that would mean to the nursery industry! It would result in repeat orders, and good orders. Moreover, such jobs completed would provide the industry with its best advertising. Let one such job be done in a community and we shall soon find neighbors following the example.

The nurseryman has not succeeded in bringing the complete home landscaping idea to full realization largely because he sells plants. He sells these from catalogues which portray individual items. As a result, an order is received. You open an envelope and read, "One lilac, one hydrangea, one dozen barberry." Now, enough of these small orders are good, and there are some folks that nothing would ever induce to purchase more than that amount, but it is my opinion that in seven cases out of ten, the right man who knows his business could sell a landscape plan and the idea of a complete home landscape. To sell a plan we must know how to make one; so here begins our serious study. The first phase of this consideration will deal with what we commonly call unit areas.

The outdoor development of the greater majority of private properties is similar to the designing of a residence by an architect and is approached from much the same angle.

II. UNIT AREAS.

Second of a series of monthly articles on the application of landscape architecture to the property of Mr. Average Citizen, by the professor of landscape design in the department of horticulture at Cornell University, discusses the treatment of unit areas.

idea is best illustrated by a comparison given in tabular form.

| Division | House | Yard |
|-----------------|----------------------------------|--|
| 1. Public area | Entrance hall Living room | Front yard Sometimes a side yard |
| 2. Service area | Kitchen Bathrooms Cellar | Driveway and turncourt Laundry yard Vegetable garden |
| 3. Private area | Study Bedrooms Dining room | Back yard with its lawn, garden, terraces, etc. |

These three divisions are called the major unit areas. The three major unit areas may be subdivided into a variety and variable number of minor unit areas. Thus, the public area may be partially divided into two sections, the front lawn and a side lawn. The service area may be

An architect starts with a definite list of his client's needs and requirements. These vary somewhat with the individual and the situation, but there are certain things that usually appear and these can be grouped into three major divisions. Perhaps the

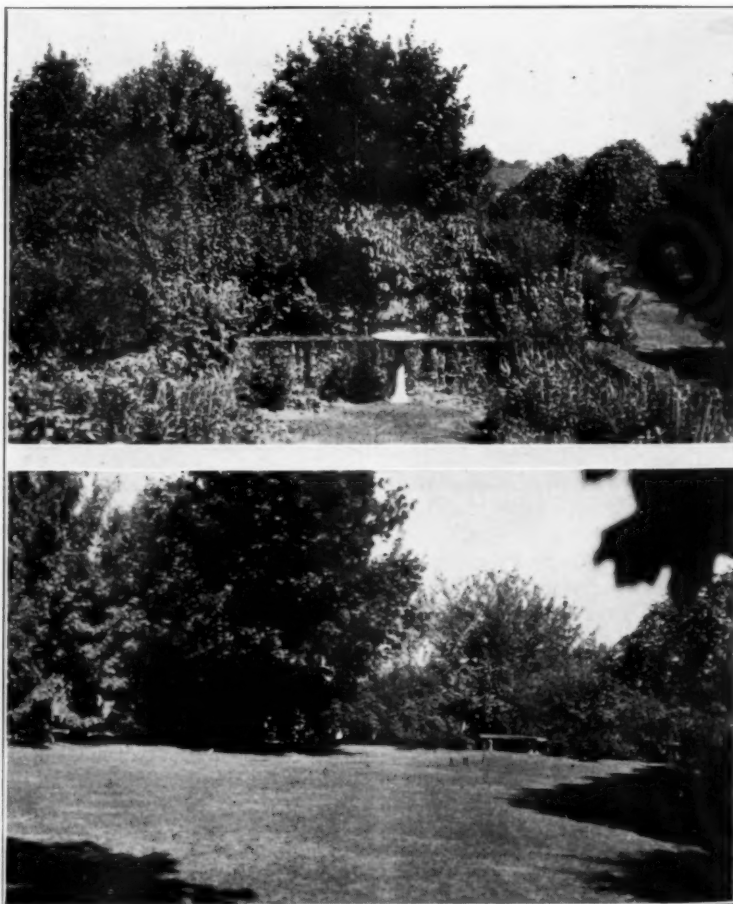


Figure 1—Back of this plant barrier is the recreation lawn shown in figure 2 below.

broken down into (a) garage, drive and turn court, (b) laundry yard, (c) vegetable garden, or anything else as required in some specific instance. The private area may be resolved into (a) living-area terrace, (b) private lawn, (c) formal perennial flower garden, (d) naturalistic garden, (e) picnic and recreational area and many others.

Subdivision of the public area is seldom of any great importance and will require no special comment. But on most problems, with the exception of the smallest-size properties, both the service area and, more particularly, the private area will be resolved into several minor units. The number of these, their size and the degree of development intensity will depend upon several factors, some of the more important being the desires of the client, the number of people concerned who will use the area, the opportunities of the land situation, the size of the property and financial or maintenance limitations.

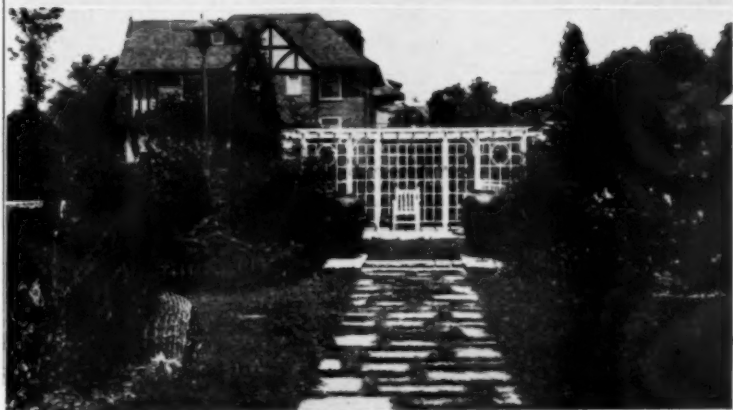
Now, there are certain principles of design that hold true for both the major and minor unit areas. You will note that each has its own specialized purpose or function and that in all cases the primary use differs. In some cases we find that these units overlap one another or, at least, are not distinctly separate. Within the house, for example, we find combination living and dining rooms, or no real entrance hall, the entrance being into the living room. So, also, in landscape planning we find the driveway crossing the front lawn, the clothes reel or posts located upon the private lawn and the vegetable garden combined with the flower garden. On the whole, however, the failure to separate unit areas in landscaping is usually considered a weakness in design. We might also note at this time that some properties may not include all three of these major areas. Under city conditions there occur many situations where either (or both) the service area or the public area may be lacking. It is also obvious that the size or importance

Figure 3—Pergola both separates and connects two unit areas.

Figure 4—Gate connects the garden and service areas.

Figure 5—Interesting paths or steps through the boundary plantings may connect two gardens.

Figure 6—An axis line, a route of circulation and the repetition of the verticle cedars integrate the private lawn and the garden areas.



of the areas may vary greatly with the property or family concerned.

Just as the various rooms within the house are usually separated by wall barriers, so also the unit areas of the property need separation (see illustrations 1 and 2). The term unit area arises from the fact that each one is more or less a complete unit in itself. The architect divides the house into rooms by means of walls and then connects and relates the various rooms with doorways, arches, halls and stairs, thus bringing all the parts into an organized whole. The landscape designer produces separation by the use of walls, fences, latticework, hedges and shrub borders. Occasionally pergolas and summerhouses are used for this purpose. He then relates and ties these units together by three methods of treatment.

The first of these is the circulatory system, the route by which a person travels through each unit and from one area to another. Paths or turf connect through gates or openings, allowing easy movement from one unit to the next (see illustrations 4 and 5).

The second means is accomplished by the use of axis lines and view lines that extend from unit to unit (see illustration 6). Axis lines will be explained in a future article, but view lines are easily understood. Views from one unit to another should be somewhat restricted as to their extent. The best effects are obtained by rather brief glimpses or vistas through openings in the boundaries located on the circulation lines or over low walls or plantings placed between taller masses of material.

The third means of relating areas is through the repetition or carry-over of particular items or effects from one to the other or through material or some structure that is obviously used as a common boundary for both areas. This suggests that certain species of plants, as well as certain plant combinations or compositions, might be repeated in the units to be related (see illustration 6). We may note that a pergola or summerhouse might be used as a feature at the end or corner of one area. From within the area it forms part of the definite boundary. But when one enters this structure he finds that views or exit are permitted into the adjacent second area. Passing through into this part of the property and looking back,

the structure again is observed functioning as boundary to the second area (see illustration 3). Thus, harmony and relationship between the two units are achieved. So, also, the carrying over of a style or the atmosphere from one area to another would definitely blend the two and serve to produce unity throughout the layout.

In designing, it is best to study each of these areas separately, since their functions and subsequent treatments will differ. We shall begin our study of these with a consideration of the public area. The design and planting of this unit will be explained in our next discussion.

DOGWOOD CELEBRATION.

The ceremonies dedicating the dogwoods of Valley Forge park to George Washington and his army May 10 were, to those who know his work, no less a celebration for Adolf Muller, of the DeKalb Nurseries, Norristown, Pa. For years he has worked and spoken in behalf of the American native trees and especially the dogwood. He is honored as a member of the Valley Forge park commission, the encampment area totaling 1,650 acres owned and administered by the commonwealth of Pennsylvania. To the address of the day by Gov. Arthur H. James responses were made by governors of the other twelve original states.

On the general committee of sixty for the occasion were several florists and nurserymen, including Louis V. Dorp, Charles H. Grakelow, Adolf Muller and Robert Pyle.

DREER CASE IN COURT.

New Jersey's supreme court has been called upon to decide whether workers in nurseries are to be rated as engaged in agriculture under the state unemployment compensation law, and thus exempt from the act's provisions.

The issue was argued before the court May 7, when it was emphasized by counsel that three test cases brought by Henry A. Dreer, Inc., of Riverton, against the state unemployment compensation commission and its review board have an important bearing on a business representing investments of \$18,000,000 in New Jersey.

Two years ago the commission ruled nursery employees were agricultural

laborers. This ruling was reversed by the board of review and Dreer's appealed. Each appeal involved a different type of work. B. J.

QUERCUS BOREALIS MAXIMA (RUBRA).

Few would question the statement that the oaks constitute one of our most useful groups of ornamental trees. With the exception of a few species, they all obtain a high rating in our list of deciduous plants. The red oak is one of the best of the species for ornamental planting. In fact, it has been spoken of as being the best shade tree for the eastern half of the United States. It is native in the territory from Nova Scotia to Florida, west to Minnesota and Texas. Now classified by botanists as *Quercus borealis maxima*, it often continues under the name of *Quercus rubra*.

The red oak becomes a large tree at maturity, eighty-five to 100 feet or more in height, with a broad, round-topped head. The branches are not so heavy as, and more upright than, those of the white oak. Except occasionally on old trees, the bark is not deeply furrowed, being reddish-green in color on the twigs and smaller branches. The buds are glabrous except at the apex.

The leaves are large, five to nine inches long, with seven to eleven lobes and the sinuses reaching nearly halfway to the middle. The leaves are dull or glossy green above and somewhat lighter-colored beneath. They turn a brilliant red in the autumn. The acorns are large with a shallow cup.

The red oak is not so specific in its soil requirements as some of the other oaks. It does best in a deep, rich, well drained, heavy loam soil. It is said not to tolerate shade in its early stages of growth. Given these favorable soil conditions, it becomes the most rapid-growing oak and compares favorably with most of our best trees. Propagation is from seeds, which may be either fall or spring sown.

The red oak makes an excellent tree for shade in parks or lawn. It may be used to better advantage as a shade tree on small properties than the white oak because of its more upright-branching habit. It also may be used as a street tree in residential districts. L. C. C.

Sphagnum Prevents Damping-off Losses

By Claude Hope, V. T. Stoutemyer and A. W. Close

A simple method for controlling losses of seedlings by damping-off was outlined in a report to the floricultural section of the American Society for Horticultural Science when it met in Philadelphia December 30 to January 1. By this new method, the expense and inconvenience of soil sterilization and the uncertainty of chemical treatment were eliminated. If other horticulturists confirm the results obtained at the United States plant introduction garden at Glenn Dale, Md., the method should be of great value to home gardeners. Even professional growers may find it helpful to combine the sphagnum method with the use of sterilized soil.

In the most impressive test reported, flats were filled with soil so badly infested with damping-off organisms that two previous sowings in it had been complete failures. From one-half of each of six flats enough soil was taken out to make room for a layer of sphagnum only one-quarter inch thick. In the same fashion, six other flats were prepared with a layer of sphagnum three-fourths inch thick. In both series, the sphagnum layers were in contact with the infested soil. Petunia seeds were sown broadcast in some of the flats; in others, snapdragon, forget-me-not and exacum seeds were broadcast. The seeds were measured so that as many were sown on soil as on sphagnum in each flat. The seedlings were counted when germination was finished and again forty-five days after sowing. The seedling stands are compared by diagram on this page. In preparing this diagram, the best germination for each kind of seed was arbitrarily taken as 100 per cent and all the other stands were expressed as percentages of the best one. Only the seeds of Exacum affine germinated as well on soil as on sphagnum. It was not long, however, until nearly all the seedlings on the soil were dead. Not a single loss was recorded on the sphagnum. Damping-off did not take such a high toll in the other flats, but again, no losses were recorded on sphagnum. In every case, an appreciable number of seedlings damped-off in the soil half of

At the United States plant introduction garden, Glenn Dale, Md., a greater variety of seeds is sown each year than usually falls within the program of commercial places. It is necessary that everything be worked out in the simplest possible fashion, in order to save both time and money. The procedure described here by members of the staff is a development of the procedure long familiar to well trained nurserymen. Its successful use at the garden has attracted the favorable attention of many commercial visitors as well as scientific colleagues, states B. T. Morrison, principal horticulturist in charge.

the flat. In several flats, damping-off advanced until it reached the sphagnum, where it stopped just as if there were a barrier.

Another test reported is of interest to the week-end gardener. In April seeds of about forty kinds of plants were sown in rows on a layer of sphagnum lying on unsterilized garden soil in flats. These flats were kept in a tiny unheated greenhouse that was attended early in the morning or late in the afternoons. Here it was cold at night and hot at midday. Any good gardener will recognize these as conditions leading up to disaster with seedlings. In other years, damping-off had taken a high proportion of seed-

lings, but on the sphagnum, germination was good and the seedlings developed rapidly. Only one tiny spot of damping-off appeared in a row of mimulus seedlings. The spread was so slow that the loss was negligible.

During the hottest period of the summer of 1940, seeds were sown on sphagnum in a coldframe. The underlying soil was so infested with damping-off organisms that a previous sowing had been a complete failure. There was a near failure on the plot of soil set up for comparison with sphagnum. On the other hand, on sphagnum, even in a layer one-quarter inch thick, there were good stands and no damping-off, as indicated by the illustration of the flats of myosotis. Flats of other seeds showed a more striking contrast.

Data were given on the successful germination of over eighty kinds of seeds on sphagnum. Included among these were most of the common garden plants that are started in seedbeds and transplanted, such as azaleas, cabbage, celery, columbine, delphinium, forget-me-not, pansy, petunia, snapdragon, tomato, verbascum and zinnia. At the United States plant introduction garden, living sphagnum has been used in this manner for seed germination for over fifteen years. During that time, it is estimated that seeds of over 2,500 different species have been successfully started. It seems safe to say that any kind of seed may be germinated on sphagnum. The tests conducted in 1940 showed clearly that sphagnum from bales

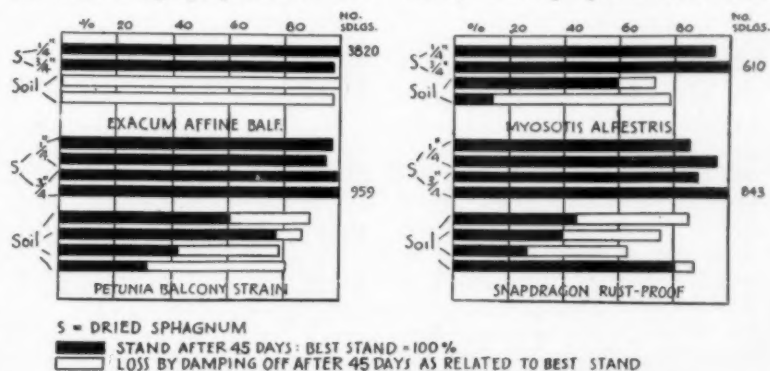


Figure 1—The effect of contaminated soil and of commercial sphagnum in contact with contaminated soil on germination and damping-off in the greenhouse.

could be substituted for living sphagnum under the Glenn Dale conditions, thus apparently making the method available to all.

The preparation of the sphagnum and the flats for seed sowing is simple. Ordinary Wisconsin baled sphagnum has been used at Glenn Dale. It is rubbed through a sieve of hardware cloth of three meshes to the inch. In routine practice, the flat is filled to within one and one-half inches of the top with a mixture of two parts peat and one part sand to serve as a moisture-holding substratum, but soil or sand may be used in place of this mixture. If the seedlings are to stay in the flat for long, soil is preferred. The loose shredded moss is added to fill the flat, then leveled and slightly firmed to bring the surface about one-half inch below the top. As a final step, the flats are well watered, either before or immediately after sowing. It is important to wet the sphagnum thoroughly. Sometimes a second watering is necessary a few hours later. It seems impossible to apply too much water at this stage, provided the substratum is well drained. Stronger seedlings are obtained if a solution of one teaspoonful each of potassium nitrate (saltpeter) and commercial superphosphate per gallon of water is used for the initial watering instead of tap water.

The seeds are broadcast over the surface of the sphagnum and usually are not covered unless they are as large as pepper or scarlet sage. After sowing, a close-fitting pane of glass is laid over the flat. If the use of glass is inconvenient, even fine seeds may be given a thin cover of sphagnum, but in this case the flats require closer attention in watering. Until germination, the flats are protected from direct sunlight. As the seedlings develop, air is admitted gradually. Usually, if the sphagnum is thoroughly wet in the beginning, no more water is required until some days after germination. It is well to note that it is difficult to detect excessive drying by the appearance of the sphagnum. At the present time, it seems safer to overwater than to underwater, but any experienced grower should have no difficulty on this score. If the seeds are covered with sphagnum, there need be no fear of packing; the sphagnum remains open and loose for a long period.

Usually at Glenn Dale, seedlings are pricked off within two weeks of germination by merely lifting them out of the sphagnum. It is surprising how easily the entire roots of even large seedlings may be pulled from the moss without injury. If one wishes, the seedlings may be held in the flats without harm until large enough to transplant to the garden, provided they are properly spaced and nutrients are supplied. Transplanting will be made easier if there is a thicker layer of sphagnum on the seed flat.

RHODE ISLAND LABOR LAW.

Another state law mill ceased grinding without passage of proposed state wage-hour legislation when such a measure was allowed to die as the 1941 session of the Rhode Island legislature reached adjournment May 1.

Although rejecting the wage-hour proposal, the Rhode Island lawmakers gave final approval in the closing hours of the session to a bill creating a state labor relations board and prescribing fair labor standards for workers in Rhode Island intrastate enterprise. The board will consist of three members, representing labor, industry

and the public, to be named by the governor with senate approval. Members will receive \$25 a day for not more than 40 days' service annually. The right of employees to organize and bargain collectively is affirmed, and unfair labor practices are defined.

B. J.

BIDS for planting the roadside improvement project of the Lexington-Frankfort road from the Yarnallton road to the Midway road will be received by the department of highways, Frankfort, Ky., until 10 a. m., May 23. The plan calls for 1,410 honeysuckles, 345 miscellaneous plants, 38,363 square yards of bluegrass sod and a quantity of grass and clover seeds.

RECORDS of nursery inspection in New York state for 1940 indicate that there are 1,297 nurseries in the state, with approximately 12,392 acres. Seven counties each contain over 900 acres. Nineteen counties have over 100 acres, twenty-nine counties between ten and 100 acres and fourteen counties less than ten acres, including four which have no nurseries.

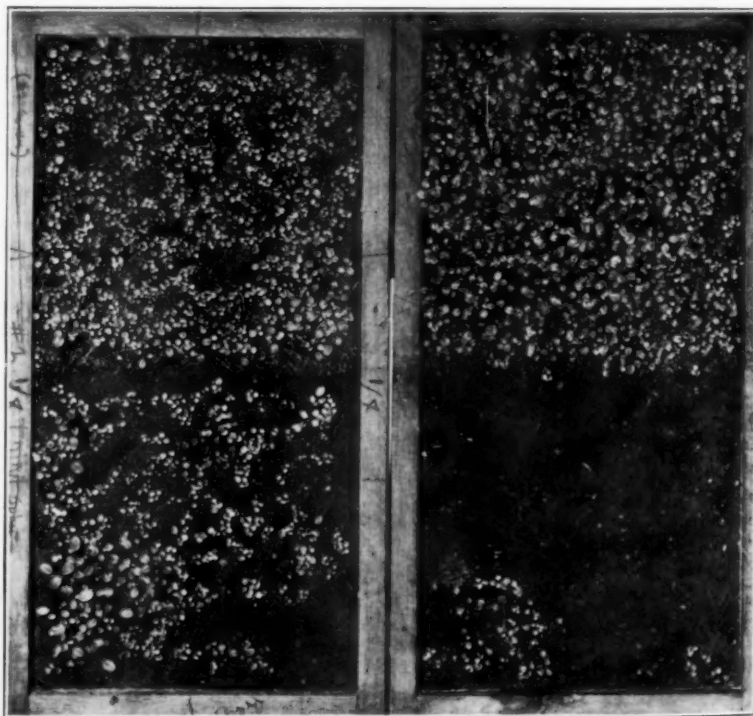


Figure 2—Sowings of myosotis on soil compared with those of sphagnum. The lower half of each flat has soil alone; the upper half has a layer of sphagnum over the same soil. In the flat on the left the sphagnum layer is one-fourth inch thick; on the right, three-quarters inch. Photographed fifty-two days after sowing.

Excerpts from a Plantsman's Notebook

By C. W. Wood

Hosta Fortunei.

(April 15, 1941.) I have had much pleasure lately going over the available literature on the hostas, or funkias, as they are usually known, and note among other things that the species were as badly confused by old-time gardeners as they are today. Thus, I read in one of Mrs. Earle's Pot-pourri books that "all the funkias are worth growing, but all may be left out of a small garden except Funkia Sieboldi (sic). That, anyhow, must be grown out of doors, as it is a beautiful plant, gives no trouble, flowers every year and lasts well in water." She must have meant Hosta Fortunei, of course, because true H. Sieboldiana has flower scapes which do not rise above the foliage and is, therefore, inferior to H. Fortunei as a garden plant and for cutting. I have long paid special attention to hostas when visiting nurseries in late summer and almost invariably find H. Sieboldiana labels covering H. Fortunei. That does not detract from the value of the plant, for in its lovely bluish leaves and pale blue bells, on foot-high or taller scapes, we have one of summer's finest offerings.

It, together with the others of the genus, is a plant that repays bountifully for generous treatment. Unless the soil is rich and deep one need never expect the luxuriant clumps of foliage, which is a season-long attraction, nor generously filled, tall scapes. When established, the plant is best left strictly alone, except for feeding, preferably with top-dressings of old manure and an occasional stimulant in the form of a complete fertilizer. It is usually propagated by dividing the clumps or by sowing seeds as soon as ripe.

Camassia.

(April 15, 1941.) A neighborhood grower, who last fall asked for advice on substitutes for tulips, reported recently that one suggested substitute, camassia, was one of the best investments he ever made in bulbous stock. The combination of a colored picture of the flowers, which, incidentally, are quite unknown to most gardeners, and a little talking to his customers

More comments on the usefulness, propagation and culture of less common herbaceous perennials that are of interest particularly to the neighborhood grower, tested and studied in recent seasons in the writer's nursery in northern Michigan.

moved almost as many bulbs as he normally sells in the tulip line and brought a better profit. If I am not mistaken, his customers will be as well satisfied at flowering time, which coincides with the tulip season, as he was during the selling period.

Camassia is an American genus of liliads, so closely related to scilla that the first species, *C. esculenta*, that came to the attention of botanists was known as *Scilla esculenta* at one time. It is far showier and more spectacular, even in its poorest forms, than any scilla and serves different purposes in the garden. Carl Purdy, of California, who has long labored to bring camassias to the attention of American gardeners, says, "At their best, the stems are stiff and heavy, the flowers large and many, and the masses of bloom approach the *eremurus* in beauty and are even finer in separate flowers." It is generally supposed that a moist soil is necessary for their culture; as a matter of fact, they will give good results in any good garden soil and in full sun or part shade. They are easiest to handle in a low spot or along a stream bank, where constant moisture is assured, but one need not deny himself the pleasure of growing camassias if these conditions are not present. I doubt if the average nurseryman can afford to grow his own stock of camassias as long as they are available in the west at present low prices.

Undoubtedly, the best species available is *C. Leichtlinii*. It is known in several forms, varying from white and creamy-white through lavender and shades of blue to purple. These have been segregated into two groups, the one embracing cream and white and the other the blues and

kindred shades. Under good treatment these forms grow up to three feet in height and, if planted in masses close together (four inches apart and four inches deep), make a spectacular showing in the spring garden. *C. Quamash*, often listed as *C. esculenta*, another western species, seldom exceeds two feet in height and has deep blue flowers, while the true *C. esculenta*, which grows naturally from Pennsylvania to Minnesota and southward to Texas, has pale blue flowers on scapes of the same height as the next preceding.

Zygadenus Fremontii.

(April 15, 1941.) Speaking of camassia reminds me that a closely related genus, *zygadenus*—so closely related, in fact, that some are known locally as false camass—possesses not a little merit in a garden role. That is especially true of *Z. Fremontii*, a native of the coast range in California. From an attractive basal clump of foliage, stout stems rise to a height of two feet or less, each bearing a terminal raceme of large (inch-wide), showy yellow flowers in early spring. Its comparative showiness, hardiness in eastern gardens, early flowering and ease of culture in a sunny situation mark it for wider acceptance in gardens when it becomes better known. Propagation is by seeds (slow) or division.

Galium Boreale.

(April 16, 1941.) While writing the preceding notes on natives, I got to thinking about the neglected opportunities in American plants, and the northern bedstraw, *Galium boreale*, which some consider "handsomer than gypsophila and just as useful," came to mind. This is a plant of rocky slopes from Quebec to Alaska and New Jersey to Colorado that blooms here in northern Michigan throughout much of the summer and is, therefore, a useful garden plant as well as a good filler in floral work. I notice that some authorities say it needs a subacid soil, recommending treatment similar to that given wintergreen and creeping

bluets, but that can scarcely be a universal trait, for I have found it on calcareous banks along with lime-loving legumes. If the supposed need for an acid soil has kept some growers from giving this bedstraw a trial, it has surely done an injustice to a really worthy plant.

Here the plant reaches up to eighteen inches in height, though two feet is not unusual in rich soil. It does well in full sun or light shade and, no doubt, would endure considerable shade in the hotter parts of the country. Although never showy, its airy effect, created by dense clusters of pure white flowers, is needed in every garden. Neighborhood growers will, I am sure, find it a good selling item. I have had it from Alaska in a form that did not exceed a height of six inches, and it was then a lovely rock garden plant, though hard to keep going in this trying climate. It is easily propagated from seeds, especially if they are sown outdoors in autumn.

Phyteuma Comosum.

(April 17, 1941.) I had an inquiry this morning from an American Nurseryman reader for directions on the culture of the rampant, *Phyteuma comosum*, the first flicker of interest in that rare plant that I have seen manifested in many years. Among other things, he remarked that he understood from other growers and from the few notes which he had read that the plant is too difficult for American gardens. And right there, I suspect, he and many others are wrong, for the fact that its natural habitat is the hot cliffs of the southern Alps fits it far better for conditions in eastern United States than for the moisture of the British isles, from whence has come most of the wailing about the plant's intractable nature. There growers have to go to much maneuvering to keep the plant in the open and, according to British literature, it is usually grown in pots in an alpine house. That is accounted for by the fact that it is intolerant of moisture around the crown. Its Italian home seems to have given some the impression that it would be tender to cold, a supposition that has not been borne out in trials here within the past few years. I had much trouble with it years ago, because of a lack of knowledge of its needs, but since finding out that it wants only a limestone soil that is

perfectly drained and a little water during long dry periods, it has been no trouble at all. As to hardiness, the fact that William Reader, the superintendent of parks at Calgary, Canada, had, and probably has yet, a large planting of this rampant where it has to take the punishment of 50 degrees below zero in winter and often intense heat in summer, tells one that it can stand almost anything that the United States has to offer. I am quite sure that careful growers will experience little difficulty with it if they use these observations as a basis for their work, though they will likely find, as I have, that the real problem in its culture is in getting the seedlings through their delicate stage. And I am sorry that I cannot give reliable directions for that task. All one can do, so far as I know, is to handle them with one's most delicate touch, being careful in watering (always from the bottom, I believe) and transplanting, and trust to the gods for their help. Fortunately, they are quite indestructible after they pass the seedling stage.

For the benefit of those who do not know the plant, I quote Farner's description: "*Phyteuma comosum* is a most weird thing from north Italian cliff-faces in the limestone, a fleshy-rooted species, with clumps of crenulated, round, greenish-black leaves, and then, sitting among them, great solid heads of what can only be described as small purple soda-water bottles with their nozzles all turned outwards and a long feeler protruding." It may be added that the plant is not over three or four inches tall and that it blooms here in June.

Primula Juliae.

(April 18, 1941.) *Primula Juliae*, from the Caucasus, is not an exciting plant in its original form, its small, pale purple flowers being quite commonplace. The first time I grew it I was not favorably impressed with it, but since seeing it used as a carpet in wild plantings, I can see a place for it in landscape work. It is one of the easiest of primulas to grow under garden conditions, asking for little more than a woody soil and shade, preferably of deciduous trees. It has, however, been one parent of a delightful race of hybrids, of which many named forms are now on the market. Since I wrote about this

plant in this column several years ago, further experience has made additional notes advisable.

If you know only the original *Juliae* form, you will be pleasantly surprised by the splendid new colors, such as the deep salmon-pink of E. R. Jaynes and the yellow of the polyanthus hybrid, Dorothy, and you will be even more pleasantly surprised by the interest they awaken in your customers. It is unnecessary to go into details about the different kinds, because they are fully described in the lists of the few specialists who are growing them in this country, but I should like to urge you to give the newer kinds a trial. Many of them are still in the high-priced bracket, but they increase so rapidly (one grower remarks that they "almost fall apart in their eagerness to multiply") that one would soon have a sizable stock from a small beginning. Propagation is by division of the running rootstocks, preferably after they have made some growth following the flowering period.

Lotus Corniculatus.

(February 15, 1941.) Because bird's-foot trefoil, *Lotus corniculatus*, is best known as a forage crop, it is often scorned by planters of ornamental gardens as something beneath their level. In reality, it is a pretty little plant for sunny spots where it can spread out and show its yellow, usually red-edged flowers, from May onward. Its double form is even more desirable, because it does not self-sow and is also more free-flowering. It is easily grown from seeds.

ON his annual eastern selling trip, C. Bert Miller, of the Milton Nursery Co., Milton, Ore., stopped in Chicago early this month. Obtaining delivery of a car at Detroit, he is calling on the trade in the central states, planning to journey on to the Atlantic seaboard and return to Chicago for the A. A. N. convention cruise in July.

RETURNING from a two weeks' trip to California, as far south as San Jose, Avery H. Steinmetz, manager of the Portland Wholesale Nursery Co., Portland, Ore., reports that most of the nurserymen on whom he called stated that sales were almost up to last season in spite of the fact that the soil has been too wet for planting much of the time since the middle of December.

Trade Displays at California Shows

SAN FERNANDO SHOW.

The San Fernando Valley Horticultural Society's fourth annual flower show, April 26 and 27, at the Recreation Center, San Fernando, Cal., showed encouraging progress as an event that is particularly suited to an area where so much home building activity is notable.

First award for a nursery display, 10x10 feet or over, went to Armstrong Nurseries' North Hollywood sales branch. This display was circular, and in the center was a formal design.

Second award went to the Germain Seed & Plant Co., Los Angeles, for a formally landscaped rose garden.

Blue Gate Garden, Reseda, won third award in this class for a fine display of irises.

For a nursery display under 10x10 feet the Felsing Rare Carnation Gardens, North Hollywood, won first place, with an excellent group of unmarked cut carnations. B. H. French, landscape architect, won second place in this group for a replica, in miniature, of the Martin Pollard rose garden, which he planted. Third award in this class went to F. R. Hill's Nursery, Los Angeles, with an excellent showing of interesting ferns.

A special award was made to the Van Nuys Water Gardens, Van Nuys, for a garden pond, with water lilies and water grasses, bordered with succulents. An arrangement of cut water lilies was shown in memory of Mr. Woodford, founder of the gardens, formerly known as Woodford Water Gardens.

Valley Heart Gardens won a special award with a small but gemlike planting of low perennials, with a tiny pool, bordered back and sides with Pacific hybrid delphiniums.

Idso Perennial Gardens, Van Nuys, bordered a display with white trelliswork, with climbing Black Boy roses in bloom.

Toluca Lake Nursery, Burbank, created a corner nook, with a natural log garden seat, log fence background and flagstones, for an old-fashioned planting of flowering plants.

Dereign's Nursery, North Hollywood, showed specimens of about fifty pelargoniums, potted in graduated sizes, and a large number of fuchsias.

Sherman Oaks Nursery, Van Nuys, used rose trees in a trellis-bordered exhibit and included also an avocado tree, known as Henry's Select, said to be suited to the climate of San Fernando valley, where avocados are difficult to grow, due to extremes of temperature, particularly winter frosts.

GLENDALE FLOWER SHOW.

Glendale, Cal., again sponsored a creditable spring flower show, in the new civic auditorium April 27 to 29.

Evans & Reeves Nurseries, West Los Angeles, devoted their space to potted pelargoniums, with a background of rhododendrons and some fuchsias.

Burkhard & Cole, Pasadena, specialists in delphiniums, showed Pacific Giant hybrids, also a collection of irises, with a planting in front of *Dichondra repens*.

Howard & Smith, Montebello, showed a collection of pelargoniums in pots and cut gerberas.

Percey's Evergreen Nursery, Glendale, constructed an alcove, using trellis, with evergreen and flowering shrubs.

Armstrong Nurseries, Ontario, featured cymbidiums, strelitzias, azaleas, *chamaeluciums* and smaller-flowering plants against a green background.

Toluca Lake Nursery, Burbank, made up a small rustic garden, with annual flowers against evergreens.

Mooren's Glendale Crest Nursery, in a colorful and well arranged exhibit lighted by Kim garden lighting, showed many varieties of pelargoniums.

Tuttle Bros. Nurseries showed some unusual flowering fruit trees.

BIG SHOW AT OAKLAND.

One of the country's outstanding flower shows closed at Oakland, Cal., May 4, when the twelfth annual California spring garden show ended after five days during which more than 100,000 persons packed the Exposition Auditorium, the huge tent which housed the allied groups and the outdoor gardens.

Howard Gilkey this year probably created his masterpiece in the show. Backgrounds were a perfect setting



One of Central Features of Spring Garden Show at Oakland.

for the rare and beautiful shrubs and plants assembled. Most of the exhibits were labeled.

Coming in from the outdoors on a ramp, visitors caught an inspiring view of the whole scene. A vista of bright gardens led the eye on to the huge waterfall at the opposite end of the building, where 10,000 gallons of water passed over the falls every minute. The theme this year was "Rainbow Forest" and colored lights at night carried out the effects on the waterfall. Huge redwood trees, reaching to the top of the building, had been made with slabs of redwood.

Carl Purdy, Ukiah, and Herbert Stockton, San Jose, can always be counted upon for interesting exhibits of natives. Mr. Purdy received first prize for his collection of native bulbs, and Mr. Stockton for his garden of American wild flowers.

The California Nursery Co., Niles, exhibited Golden State roses in its outdoor garden, receiving first prize for an exhibit of one variety, not less than 100 plants.

Cypress Lawn Memorial Park Nursery, Colma, received first prize for its entry of roses, not less than 300 plants, which included a large number of varieties.

Toichi Domoto, Hayward, received first prize for an exhibit of evergreen trees, and second for ornamental stock. Tree peonies and azaleas and massed pink rhododendrons were included in his garden.

The California Nursery Co. received first for a garden of spring flowers featuring spring bulbs and rhododendrons, not less than 750 square feet. The company used a rustic cabin at one end of the space, planted with narcissi, with a background of rhododendrons, poplars, maples, evergreens and copper beech.

Prize winners for exhibits listed under herbaceous plants included the Garden Nursery, Oakland, first, for a plot of 100 square feet of annuals and perennials; Charles C. Navlet Co., Oakland, first, for a garden unit, outdoors, featuring perennials, annuals and rock plants in bloom, twenty-five or more varieties, not less than 500 square feet, and Palo Alto Nursery, Palo Alto, first, for a garden plot featuring fancy and zonal pelargoniums, not less than 250 square feet.

F. W. Davis, San Francisco, was well represented with his interesting varieties of violas, receiving first prize.

Roeder Bros., San Jose, came in with a much larger showing of their double gerberas than in the past, receiving a blue ribbon for 100 plants in bloom. John W. Aitkin received first for an exhibit of over 300 square feet of pansies. McDonnell Bros., Oakland, received first for an exhibit of bedding plants, in semiformal arrangement, not less than 800 square feet.

The Home Garden Nursery, Berkeley, received first prize for ornamental nursery stock displayed in an informal garden in the outdoor section.

Leonard Coates Nurseries, Inc., San Jose, received second for an exhibit of coniferous evergreens with flowering shrubs.

Del Amo Nurseries, Compton, received first place for a collection of outdoor-grown palms.

C. Takahashi, Berkeley, with his interesting dwarf Japanese tree exhibit, won a blue ribbon.

The U. S. Espalier Nursery, Portland, Ore., received first place for a showing of espalier fruit trees.

Carl Salbach, Berkeley, received first prize for his collection of bearded irises.

J. Wesley Martin, Oakland, received first prize for the best collection of seventy-five stalks of irises.

Martin & Overlach, San Francisco, had a striking exhibit of five garden units arranged as an ensemble, which featured structural details and potted plant specimens. A pergola of bamboo on a raised platform was the center of the arrangement, with brick walks and platforms. The entry received first prize.

The Christensen Nursery Co., San Francisco, received first prize for a naturalistic garden unit. Egli & Bruderer, Berkeley, received first for an informal garden. Fred W. Bullock was awarded second prize for a garden of specimen trees, and the East Bay Nursery, Berkeley, received first for a garden showing an oriental influence.

THE Cedarhurst Nurseries, Inc., Riverside, R. I., has been incorporated by Arthur S. Lewis, Fairfield avenue, East Providence; Manuel Cabrita, 119 Smith street, Riverside, and Esau Kempenaar and Frederick Christensen, Newport. The authorized capitalization is \$8,000, divided into 800 shares of common stock, having a par value of \$10 each.

BEAUMONT CLUB MEETS.

At the May meeting of the Beaumont Florists' and Nurserymen's Club, at the LaSalle hotel, Beaumont, Tex., some time was given to a discussion of the proposed nursery to be developed at the state prison at Huntsville. The authorities state the purpose is to grow shrubs and plants for prison grounds, other state grounds in Austin and also for an exchange with prison nurseries of other states. The club took no action, but President A. C. P. Tyler advised that any individual who cared to might make an individual appeal.

An indirect report was given on the present question as to whether or not the state department of agriculture will be discontinued and placed under the agricultural and mechanical college. One indication it is contemplated is the fact that no appropriation has yet been made by the state for the agricultural department for the year.

Report of the work done the past month by the promotional publicity committee was commended. Mrs. Jim Bettersworth, chairman, told of the interview with W. W. Ward, editor of the Beaumont Journal, in which he extended to club members the privilege of submitting a series of articles to be published in the Journal two or three times weekly. Mr. Ward stated that one daily might well be used, but it was felt this would be almost impossible to do until later.

Mr. Tyler asked that each member write several articles and mail them to Mrs. Bettersworth, who will edit and submit them to Mr. Ward as she sees fit and according to seasonal demands. The first article of this series was published in the May 2 issue of the Beaumont Journal under the heading, "Care Given Now Makes Fine Blooms for Camellias and Azaleas When Spring Comes," and carried the by-line of A. C. P. Tyler.

Since the appearance of this article countless persons have commented on its merit and expressed intention of keeping a scrapbook of the articles. Under the by-line the editor uses: "(This is one of a series of articles to be presented by members of the Beaumont Florists' and Nurserymen's Club.)" This, in the opinion of members, is going to prove to be good publicity for the club. Too, it will eliminate much time wasted giving such advice over the telephone to customers.

New Propagation Methods in Practice

By Cornelius Van Tol

In the past few years a great many new ideas have been developed in the propagation of plants, some of which on the face of it seemed almost sensational. Most of these new developments were the results of investigation and experimentation by scientists at experiment stations and in research laboratories. When the results of these scientific researches were first published, a great many of us might perhaps have gained the impression that all the troubles of the commercial propagator were now over and it was just a matter of determining what we wanted to grow and with the aid of these new discoveries we should be able to produce at will any number of any variety of plant, without the fear of losses or disappointments, which, in a way, had heretofore made plant production such an interesting, though at times disappointing, job. Personally, I felt that if these new ways really were so foolproof, all the fun would be taken out of propagating, and plant production would be placed on an almost mechanical basis.

Of how much practical value have these discoveries really been? And how far have the practical nurserymen made use of the work done by these scientists? As one nurseryman put it: "The new discoveries made by the scientists will most certainly affect our methods in the future. Some are so new that we cannot be sure of their value, and some processes must have much work done on them before they are ready for the nurseryman. But the encouraging thing is that something is being done, and at colleges, experiment stations and other institutions men are hard at work, trying to help the nurseryman."

Nurserymen in general have shown considerable interest and most of them have at various times tried the so-called root-promoting substances with more or less good results. I mention the substances, because they are without doubt the most sensational of all these discoveries and have been more universally tried out

The viewpoint of the hard-headed nurseryman toward the practical application of new methods in plant propagation, presented by a member of the New England Nurserymen's Association at its annual meeting, is the more worthy of attention because it was well received by that critical group. His comments merit the attention of those who have tried such methods, successfully or unsuccessfully, as well as those who have postponed trial.

than anything else. Many successful propagators are regularly using one or another of these compounds to accelerate the rooting of cuttings. But we have found that while the easy-to-root cuttings root easier, hard-to-root varieties are almost as hard as before. The fact remains, however, that at the various institutions men have succeeded in rooting some plants that we used to consider impossible to root and have rooted them in such percentages as to make it seem practical. One experiment station reports that the tests conducted there seem to indicate that for results with the powders one must have a bottom heat of not less than 70 degrees. This station also admits that the only improvement is a saving in the time it takes the cuttings to root, that anything which can be rooted with the use of so-called hormones can be rooted without it, if we know just what type of cuttings to use and when to make them.

Before going any farther let me say that these chemical compounds are not in any sense substitutes for skill, but rather are definite aids in the rapid formation of good root systems. The propagator must control the environment into which the cuttings are set just as carefully as he would if no stimulant were used. Even more careful attention must be given to temperature, humidity, watering and shading, so that the con-

ditions will be as nearly perfect as possible. And if we can create these conditions, there is no reason why practical propagators cannot be as successful with the chemicals as the scientists.

What are some of these results obtained at these experiment stations? Because perhaps the first information on this subject came from there, I shall cite briefly some of the reports by the Boyce Thompson Institute for Plant Research, as recorded by Henry Kirkpatrick, Jr., of the staff of that institution. He states that indolebutyric acid is definitely the best root-inducing substance to date for commercial use. Temperatures lower than 60 degrees tended to decrease the effectiveness of the growth substance. A mixture of two-thirds sand and one-third peat moss was found to be the best rooting medium for most plants, with the moisture content of this medium kept rather on the dry side. Heeled cuttings of conifers gave better results than those made without a heel. In general, all types that root without chemical aid root equally well and quicker with it. And the following are some of the harder-to-root plants that responded well to either eighty or forty milligrams of acid per liter solutions: *Abies Veitchii* and *Pinsapo*, varieties of *Chamaecyparis obtusa*, *Juniperus virginiana* *Keteleeri* and *tripartita*, various types of pines, *Picea excelsa* varieties, *Picea Omorika* and *Picea pungens*, as well as many types and varieties of *tsga*. In the propagation of *rhododendrons* as well as deciduous *azaleas* the substances proved of great benefit, while *American holly* definitely responded to treatments with indolebutyric acid in either the powder or liquid form.

Now how do these experiences compare with the experiences of commercial propagators? They must produce plants just as quickly and cheaply as possible and their main question is whether these treatments cut costs. In order to find out what these hardheaded, practical men thought of these new ways, I sent a questionnaire with six simple ques-

tions. The answers to these, as boiled down, showed that most of them were using or had tried at some time the root-promoting substances, mostly in powder form. One man replied definitely that he was not using them and that they were of no value whatsoever for him. We shall therefore leave him out of the picture altogether and just give you the reaction of the other eight replies I received. To the question of what they found to be the practical results of chemicals on different types of hardwood cuttings in the greenhouse, five indicated in various ways that they were quite pleased with the results. Some reported a better percentage of rooting than before, others a better root system. Two reported that it was not worth considering or they had no reaction worth mentioning.

To the question of what results were on softwood cuttings in the summer, the replies were more varied. The same two mentioned before had not found any reaction worth considering, but among the others there was quite a wide range of opinion. Some felt that the results on June cuttings of coniferous evergreens were good; another thought they were not so helpful, and some did not use that method of propagating. On broad-leaved evergreen cuttings in June some report good and fairly good results; others do not use the method, and one man reported, "They did very poorly with powder; perhaps I do not know how to grow these." And on softwood shrub cuttings the general report was of not much reaction, except for one who had good results with *kolkwitzia* and another who had good results with azaleas of the Kurume type. But the curious fact is that all these men only used the treatments on the general run of ordinary plants, usually grown successfully from cuttings, so that the answers recorded so far do not show any real practical value in the use of the chemicals. For, after all, what is gained by having, for instance, *taxus* rooted in January in the greenhouse instead of in April? Most people would not have space available to handle them at that time anyway. And most of these subjects give a good percentage of rooting in the old way.

The practical value of these treat-

ments would be more in their effect on the harder-to-root plants and on these I have not been able to get much of a report from these practical men.

As one man says in his reply: "The substances are helpful, but their practical value depends on a lot of experimenting and perfection of technique by the propagator." This sums the whole question up shortly. We know that the scientists are getting some really startling results, but we must use their experience as a basis to start our own experimenting. More than in anything else, it is necessary that we adapt the practice to our own particular situation. And if we keep close tabs on what is being done and then apply the results to our own problems, we can in time get more and more practical value from the work these scientists are doing. Experiments are being carried on in one of our local experiment stations with hybrid lilacs, for instance, which show that treated cuttings of various kinds will root from three to four weeks sooner than untreated cuttings. This means something in summer propagation, for the longer it takes a cutting to root, the more the chances are for its failure and the more it costs to produce a plant. This same station is carrying on successful experiments in the rooting of various types and varieties of Canadian hemlock and *Juniperus virginiana*. Of course, these plants can be grafted. But grafting at its best is a costly operation and calls for costly equipment and it is generally conceded that grafted plants are inferior to plants on their own roots.

When one sees results of 100 per cent rooting in a short time with some of these more difficult subjects, one cannot help but be hopeful that these methods will soon be practical to use in commercial work. These experiments are still in an early stage and need much checking and rechecking before the final information is ready for publication. But it is encouraging to know that there are men and institutions who are doing this groundwork for us, making the information available for us to apply in a practical way.

We all know, of course, that *Juniperus excelsa stricta* will root best from cuttings taken from the lower branches of young plants. But have we ever thought of trying this selection of cuttings with other plants? Reports were recently published of experiments which showed that the most important single factor in rooting certain difficult trees is the age of the tree from which the cuttings were taken. They also showed that lateral shoots in some cases rooted better than terminal shoots and cuttings taken from the base of some plants rooted more readily than those taken from higher up. This was particularly true in the case of various pines and oaks. It is only by constant trying out that we can get on to these things and also by keeping posted on what is being done by others for our benefit. The question has been asked me, what the value can be of rooting pines from cuttings. They grow so easily from seed. But it is only in a vegetative way that we can reproduce plants with certain good characteristics, be

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it a white pine, that has a better habit of growth or may be immune to blister rust, or a Mugho pine of particularly fine habit. We have all found them in our blocks and wished that there might be some way to get a stock of the particular plant. Now the way is being opened up for us to do so.

What has all this to do with the practical application of the new methods in plant propagation? Simply this, that the practical application of them must begin with the realization that there is much we do not know of plant propagation and that further new discoveries far beyond the limits of our imagination will be made. Their practical application is entirely up to us commercial propagators. There is no doubt in my mind that each of us can work out a system whereby we can make the maximum use of these discoveries, both those already made and those to come. But we must be willing to approach the problem with an open mind and give it a real trial. Even on plants that we have always been successful with, it may be of value to use new methods, but certainly there is a possibility to perfect the growing of these hard-to-root plants, thereby cutting costs and producing a superior product.

Being one of these unfortunate individuals who has no hobby except his own work, and being in that respect more interested in ericaceous plants than any other group, I was particularly struck with the recent developments in growing rhododendrons from cuttings. It is generally admitted that rhododendron hybrids grafted on stock of the Rh. ponticum are not the most desirable; neither do seedlings give us a true reproduction of varieties and colors.

Layering as it is sometimes practiced is too slow a process for quantity production, so that the propagation of rhododendrons from cuttings opens up visions of something really worth while. For a number of years some types, like Rh. Cunninghami, were successfully grown from cuttings in some European nurseries by special methods. Some of us have fairly regularly rooted Rh. Wilsoni. But rhododendron hybrids have not been generally grown that way. Recently, however, more and more have been published about the good results obtained with them. Two methods were

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reported in these columns during the past year, one using stem cuttings, by G. G. Nearing, a New Jersey nurseryman.

At Portland, Ore., I visited a small nursery that specialized in rhododendrons. All the plants were grown from cuttings made in late June, just before the new shoots were fully ripened. The owner, who showed me around, stressed the point, however, that it was necessary to maintain a steady bottom heat, which he did with electric cables. This heat was maintained at 75 degrees and a stand of 80 per cent or better was had regularly. Stem cuttings were used entirely. After rooting, which occurs in from six to ten weeks, depending on the variety, the cuttings were potted and carried in pits and a cool greenhouse for the first winter, where they made one growth and were planted out in the spring, by which time they were about the size of the average graft that comes out of the greenhouse in the spring. The range of varieties grown there was different from ours, being more the so-called English varieties. He admitted that our New England hardy varieties did not give quite the same percentage of rooting, but he considered them practical and successful.

The other method much publicized lately is the propagation by leaf bud cuttings. It was used at Cornell University by Dr. Henry T. Skinner. This type of cutting, consisting of a single leaf with dormant bud and a small piece of stem attached, was first found by Dr. V. T. Stoutemyer, Dr. H. B. Tukey and others to be of particular value in the handling of raspberries and blackberries.

With rhododendrons, leaf bud cuttings root much more readily than stem cuttings. If leaf cuttings are taken in late June to early July, treated with growth substances and set in a mixture of sand and peat they will form good balls in from ten to twelve weeks. If then potted up and held at a fairly high temperature, 75 to 80 degrees, for a few weeks, a large number of the buds will start into growth and quickly develop into good husky young plants. Such plants at the end of a year compare favorably in size with plants produced by grafting, which, understocks included, have required more effort and considerably longer time to produce.

It is with plants such as these that

we can really get some practical value out of the use of the chemical compounds. But, as I said before, we must be prepared to work out our own methods and our own uses from the experiences at the testing stations, and if we do this, I feel strongly that we shall find more and more practical use for these methods, as well as many others that I have not been able to touch on.

MECHANIC'S LIEN LAW.

The New York State Nurserymen's Association was successful in obtaining an amendment to the mechanic's lien law to cover nurserymen's materials and work done on property. The bill became law by the governor's signature late in April. Credit for getting the bill passed goes to Henry Maxwell, president of the association, and Arthur Christy, member of the legislative committee, states L. J. Engleson. As amended, the New York mechanic's lien law now reads as follows:

Mechanic's lien on real property. A contractor, subcontractor, laborer, material man, landscape gardener, nurseryman or person or corporation selling fruit or ornamental trees, roses, shrubbery, vines and small fruits, who performs labor or furnishes materials for the improvement of real property with the consent or at the request of the owner thereof, or of his agent, contractor or subcontractor, shall have a lien for the principal and interest, of the value, or the agreed price, of such labor or materials upon the real

property improved or to be improved and upon such improvement, from the time of filing a notice of such lien as prescribed in this chapter. Where the contract for an improvement is made with a husband or wife and the property belongs to the other or both, the husband or wife contracting shall also be presumed to be the agent of the other, unless such other having knowledge of the improvement shall, within ten days after learning of the contract, give the contractor written notice of his or her refusal to consent to the improvement. Within the meaning of the provisions of this chapter, materials actually manufactured for but not delivered to the real property, shall also be deemed to be materials furnished.

OBITUARY.

Homer L. Reed.

Homer L. Reed, general manager of production of the Stark Bros. Nurseries & Orchards Co., Louisiana, Mo., since 1898, died in the Pike county hospital April 20. He had been associated with the firm for fifty-six years. Several months ago he had undergone an operation and had never fully recovered.

The last member of a family of seven children, Mr. Reed had, with Mrs. Reed, lived in the old Stark mansion at the nursery since 1906 and had been continuously active in business and community circles. One of his contributions to the nursery industry was an electric machine, used in the grafting room, which does the wrapping more quickly and scientifically than the old method of

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AZALEAS
AND OTHER
ERICACEOUS PLANTS

PRINCETON NURSERIES of PRINCETON, N. J. SUPERIOR Hardy Ornamentals

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Nursery Stock at
Wholesale Only.

ARTHUR DUMMETT
61 W. Grand St., Mt. Vernon, N. Y.

hand grafting. Another was the Stark tree digger.

Mr. Reed was a Mason, an Odd Fellow and a Woodman. He celebrated his golden wedding anniversary with Mrs. Reed in 1939, with 500 relatives and friends in attendance. Funeral services were held April 22, with burial in Riverview cemetery. Active pallbearers were members of the Stark firm: Lloyd C. Stark, Clay H. Stark, Edwin J. Stark, Tom Stark, L. E. Stark and Stickney Stark. Surviving are his widow, two daughters and a son.

James F. Dawson.

James F. Dawson, landscape architect, associated with Olmsted Bros., Brookline, Mass., died April 24 at the age of 67. He was known for his professional work at the state capitol grounds at Olympia, Wash.; the expositions at Seattle, Wash., and San Diego, Cal., in 1906 and 1911, and other private and public projects.

Born at Jamaica Plain, Mass., he had studied his profession at Harvard University and abroad. In 1896 he entered the employ of Olmsted Bros., became an associate member of the firm in 1906 and was made a full member in 1922. Surviving are his widow, three sons and a daughter.

Mrs. Howard Weed.

Mrs. Howard E. Weed died May 1 at the Emanuel hospital, Portland, Ore. Since 1910 she had resided near Beaverton, Ore., where her husband established a nursery, which later became the National Iris Gardens. She was 71 years of age. Her son, Thurlow Weed, Beaverton, is a horticultural writer. Another son, Wilbur Weed, Redding, Cal., also survives, as well as a daughter, Edith Weed, Detroit, Mich. Her husband is still actively engaged in the nursery business.

Joseph Heller.

Joseph Heller, manager of the Newport Nursery, Newport, R. I., suffered a heart attack while at Providence, May 5, and died soon afterward. A native of Lucerne, Switzerland, he came to the United States and went to Newport in the early 1900's. Since 1907 he had been associated with the nursery and, on the death of Fred W. Smythe, the former owner, he became general manager for Mrs. Smythe. Surviving are his widow and two children, Marguerite and Joseph.

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Rooted cuttings from
2 1/4-inch pots.

Potted summer 1940.

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| <i>Ilex crenata</i> bullata..... | \$1.10 | \$10.00 |
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| <i>Juniperus</i> <i>Sabina</i> | 1.10 | 10.00 |
| <i>Retinispora</i> <i>filifera</i> <i>aurea</i> ... | 1.10 | 10.00 |
| <i>Taxus</i> <i>media</i> <i>Hicksii</i> | 1.10 | 10.00 |
| <i>Thuja</i> <i>occ. compacta</i> | 1.10 | 10.00 |
| <i>Thuja</i> <i>occ. globosa</i> | 1.10 | 10.00 |
| <i>Thuja</i> <i>occ. nigra</i> | 1.10 | 10.00 |
| <i>Thuja</i> <i>occ. Vervaeckiana</i> | 1.10 | 10.00 |
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Well established grafts
from 2 1/4-inch pots.

| | Per 10 | Per 100 |
|--|--------|---------|
| <i>Acer</i> <i>palmatum</i> <i>atropurpureum</i> <i>Novum</i> | \$3.00 | \$25.00 |
| <i>Chamaecyparis</i> <i>obtusata</i> <i>gracilis</i> <i>nana</i> <i>compacta</i> | 3.00 | 25.00 |
| <i>Fagus</i> <i>sylvatica</i> <i>pendula</i> | 3.00 | 25.00 |
| <i>Fagus</i> <i>sylvatica</i> <i>Riversii</i> | 3.00 | 25.00 |
| <i>Ilex</i> <i>opaca</i> <i>femina</i> | 2.75 | 25.00 |
| <i>Ilex</i> <i>opaca</i> <i>Howardii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>columnaris</i> <i>glauca</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>columnaris</i> <i>viridis</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>chinesis</i> <i>neoborensis</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>chinesis</i> <i>Sargentii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>chinesis</i> <i>Sargentii</i> <i>glauca</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>squamata</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>squamata</i> <i>argentea</i> <i>variegata</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>squamata</i> <i>Meyerii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>Purkii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>Cannertii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>elegantissima</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>glauca</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>globosa</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>Keteleeri</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>Kosteri</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>Schottii</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>pendula</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>pyramidaliformis</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>virginiana</i> <i>pyramidalis</i> | 2.75 | 25.00 |
| <i>Juniperus</i> <i>Sabina</i> <i>Von Ebron</i> | 2.75 | 25.00 |
| <i>Thuja</i> <i>orientalis</i> <i>aurea</i> <i>nana</i> | 2.00 | 18.00 |
| <i>Thuja</i> <i>orientalis</i> <i>conspicua</i> | 2.00 | 18.00 |
| <i>Thuja</i> <i>orientalis</i> <i>elegantissima</i> | 2.00 | 18.00 |

HESS' NURSERIES

P. O. Box 52

Mountain View, New Jersey

This Business of Ours

Reflections on the Progress and Problems of Nurserymen

By Ernest Hemming

BOX LEAF MINER.

The box leaf miner is one of those pests that can easily be overlooked until it becomes well established, and the nurseryman who grows boxwood would be well advised to become familiar with the pest before it visits his own nursery.

It is a frail little midge, to the layman, and may be easily mistaken for a gnat or mosquito. If you should happen to see any such insects hovering over your boxwood plants during May, better investigate.

By examining the old leaves it can readily be seen where the insects have emerged and left their pupal skins behind them, on the back of the old leaves. The flying midges are preparing to deposit their eggs between the skins of the tender new leaves, and it is time to spray with one pint of nicotine, twelve and one-half gallons of molasses and fifty gallons of water, or with the materials in that proportion. E. H.

TIME AND SPACE.

Under such a caption one would expect the subject matter to relate to the stars rather than trees, but what a difference it would make if time and space were considered when planting trees. There are few trees planted where the welfare of the tree is exclusively considered. To do so would almost necessitate replanning our roads and towns.

Whenever one sees almost any kind of tree come to its full glory we wonder if it would be foolish even at that price. All values are relative. Trees in the United States have always been looked upon as lumber, something to be used, and if there was no use for it, burn it up and make room to grow something of value. After about three centuries we are beginning to find out we have been destroying our basic wealth, and belatedly our government is thinking about conservation.

We cannot as individuals do much about restoring the basic wealth of the country; we shall leave that to the reforestation interests. But we can strive for a better appreciation of

trees, not the sentimental kind that sends for a tree doctor and pays out money to have an old cripple patched up, but an appreciation that will encourage us to plant the right tree in the right place in the right way. In other words, aesthetically considered a tree in the wrong place is a weed, whereas a tree planted where it can reach its full glory comes somewhere near the ultimate of beauty.

There has been much written about landscape art, but it does seem that the artist who can select the kind of tree that will thrive best in a given position comes near being a master craftsman.

The different species of trees have been evolved through eons of time to grow under certain conditions of latitude, altitude, soil and moisture. Of course, some kinds are adaptable and will thrive in varying degree in wide limits, but there is always a best tree for a given position and that perhaps is the last reason why a tree is selected. We plant a certain kind of tree because it is a fad to do so, because it is a fast grower, because we saw it growing somewhere else, because it is cheap or is given away, because we like that particular kind of tree and expect it to do equally well under all conditions. If the welfare of the tree is the main consideration in selection and planting, the results from every angle are more likely to be satisfactory.

From long experience and observation, the following rules will help to select the right tree for the right place. Choose a native tree indigenous to the latitude. A paper birch may be all right as far south as Pennsylvania, but below the Mason and Dixon line it would be a poor choice, except in the mountains; the same may be said of the hemlock and other northern trees.

The reverse is also true when planting trees indigenous to the south; they will stand the conditions much farther north along the coast than they will inland.

Be sure that what may be gained in speed of growth is usually at the cost of durability. The fast-growing

trees are usually softwooded and short-lived, while the slower-growing are hardwooded and much longer-lived.

Trees, like the Norway spruce, that originally come from northern Europe, where the climate is more even and cooler, are usually short-lived, while they are good-looking in a young state. Our hot summers make them look ratty before they reach maturity. The same may be said of the Norway maple. It has had a popularity far beyond its deserts.

While a good knowledge of geo-

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| 12 to 14 ins., B&B, ex. heavy spec. | 90.00 | 850.00 |
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| 16 to 18 ins., B&B, ex. heavy spec. | 125.00 | 1150.00 |
| 18 to 20 ins., B&B, ex. heavy spec. | 150.00 | 1350.00 |
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We consider this the finest lot of English Boxwood in America. All extra heavy specimens.

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Easy to transplant in these sizes. In Beetle Zone only. Have been growing this strain for the past ten years.

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FLOWERING CRABS

Field-grown, bushy plants.

White—Micromalus, Toringoides, Arnoldiana, Zumi Calocarpa, Snowbank, Siberian.

Pink—Peachblow, Scheldeckeri, Atrosanguinea, Prunifolia Binki, Floribunda, Spectabilis, Thelfera, Ioensis, Coronaria.

Red—Niedzwetskyana, Atropurpurea, Elyi, Hopa.

| | Per 100 |
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| 3 to 4 ft..... | \$27.00 |
| 4 to 5 ft..... | 33.00 |
| 5 to 6 ft..... | 40.00 |

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BOXWOOD GARDENS
Mrs. R. P. Royer High Point, N. C.

graphic botany and plant ecology is perhaps the best study possible to enable the nurseryman to know a tree's requirements, a study of the best specimens growing in parks and other places where they can come to their full glory gives him the best data to guide him which kind to grow and sell.

The nurseryman is largely to blame for the misuse of trees, because in his propagation he has followed the line of least resistance and largely formed public opinion as to what to plant, and it goes without saying that now so many nurseries are including planting and landscape service, their interests must go far beyond just delivering trees in good condition. E. H.

WILLOW LEAF BEETLE.

The imported willow leaf beetle, which feeds preferably on the black and golden willows, but also on the Babylon weeping and shiny willows, is the subject of circular 572 of the United States Department of Agriculture, by Clifford E. Hood. He describes this beetle as "a small, robust beetle of a metallic-blue color, sometimes tinged with red or bronze. It hibernates as an adult and in eastern New England issues from hibernation the latter part of April or early in May. It has three full generations and a partial fourth. These broods overlap, and the damage they do becomes considerable after the middle or latter part of June."

"The insect can be controlled efficiently," states the bulletin, "by spraying with lead arsenate at the rate of four pounds to 100 gallons of water, if it is applied between May 25 and June 25, in the New England states; after that period, three pounds of lead arsenate to 100 gallons of water could be used, but considerable damage will have been already done. Fish oil should be added as an adhesive. If fish oil is not available, linseed oil can be substituted, but either should be used at the rate of four fluid ounces (one-fourth pint) to each pound of poison in the spray tank. Care should be taken to treat the undersurface of the foliage, since the greater majority of the larvæ feed from beneath."

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New Books and Bulletins

PLANT GALLS.

Every nurseryman is familiar with a considerable number of insect galls, though by no means any large part of the 2,000 in North America which are identified in "Plant Galls and Gall Makers," by Dr. E. Porter Felt, director of the Bartlett tree research laboratories and former New York state entomologist, just published by the Comstock Publishing Co., at \$4.

The greater part of the book is composed of a key to galls of the various families, with more than 700 illustrations to make identification easier.

The first part is introductory in character. It discusses gall types, the principal gall producers, the various ways in which galls are developed, their economic importance and the biology of gall insects.

Persons interested in natural history as a study will find these galls rather fascinating by reason of Dr. Felt's presentation. Those concerned with identification will find the book valuable for reference. It classifies the galls according to their plant hosts and describes them concisely. Identification is made easy by the notation of characteristics in form of structure or location on the plant.

The book is a greatly extended and more comprehensive account than the author's "Key to American Insect Galls," published in 1918 as New York state museum bulletin 200 and long since out of print. A supplementary bibliography is given in the present work.

FRUIT PRODUCTION.

Successful orchardists today might be said to be approaching the scientific in their practices. The hit-or-miss farm methods of other days will not produce the quality of fruit that is necessary to yield a profit at current prices in the face of higher costs. Discussions of orchardists at state horticultural society meetings reveal the extent of the specialized knowledge shown by successful producers. Such students of fruit culture, including many nurserymen, will place high value on "Modern Fruit Production," one of the rural textbook series edited by Dr. L. H.

Bailey and just published by the Macmillan Co., at \$4.50.

The senior author, Dr. Joseph H. Gourley, horticulturist at the Ohio agricultural experiment station and professor of horticulture at Ohio State University, is so well known as an authority as to warrant the book's prime value. The coauthor is Dr. Freeman Smith Howlett, associate horticulturist and associate professor of horticulture at the same institutions respectively. While the volume represents a complete rewriting and expansion of the "Textbook of Pomology," the major portion of the material is entirely new.

The grower who wants to understand the reasons for flower formation, fruit setting, plant deficiencies and disorders will find ample biological background given. Still more thorough are the descriptions of practices followed in selection, laying out and planting the orchard, as well as the cultural practices involved, comprising fertilization, irrigation, pruning, spraying and the like. Chapters on fruit thinning and alternate bearing, handling and storage, winter injury, propagation and stocks, origin and improvement and costs are packed with valuable information. In brief, this 580-page

volume is not only a thorough textbook, but also a volume of practical reference as well.

LEGENDS OF SHRUBS.

In his latest book, "Shrubs in the Garden and Their Legends," just published by Frederick A. Stokes Co., at \$2.50, Vernon Quinn has done for these plants what he did in his previous nature books, "Seeds: Their Place in Life and Legend," "Leaves: Their Place in Life and Legend" and "Roots: Their Place in Life and Legend."

The book is entertaining, and enough incidental information appears to make the popular reader better acquainted with the shrubs that appear in these sketches. In the case of each, something of the history of the shrub, superstitions and folklore pertaining to it, uses from ancient times to the present and its course from other countries to the American scene are presented in an interesting style. Some horticultural facts, in addition, lend value to the book as well. Marie Lawson's decorative drawings again add to the charm of the book.

MEDICINAL HERBS.

In a pocket-size booklet of twenty-four pages are briefly described fifty-two medicinal herbs needed today that can be gathered or grown in New England, with brief cultural direc-

SELECTION OF NARROW-LEAVED EVERGREENS

By L. C. CHADWICK

Recent series of articles in the American Nurseryman on superior varieties of narrow-leaved evergreens reprinted in booklet form.

Companion volume to "Compiling a New Nursery List—Selection of Superior Varieties of Woody Deciduous Ornamental Plants."

Besides discussing and describing the best plants among trees, shrubs and ground covers, the author lists uses, cultural and growth habits for easy choice of most suitable varieties for landscape purposes.

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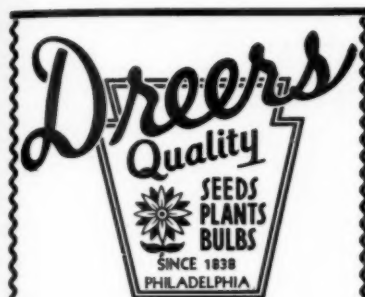
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MOUNT ARBOR NURSERIES
SHENANDOAH, IOWA

tions. The booklet was prepared for distribution with the exhibit of living and dried herb specimens at the spring flower show of the Massachusetts Horticultural Society by the Herb Society of America. It can be obtained from that organization for 25 cents a copy, the address being 300 Massachusetts avenue, Boston, Mass.

BANK ON LANDSCAPING.

Others sometimes help us in ways that we do not help ourselves. That is an old thought that comes to mind in looking over a copy of a 32-page pamphlet, printed in green and black and bound in an attractive stiff paper cover, 6x9 inches in dimensions, entitled "Landscaping the Small Home in Southern California" and distributed with the compliments of the real estate loan department of the Security-First National Bank of Los Angeles.

With numerous sketches, the text points out the early steps in design and planning for a home planting. These are well set forth, and acknowledgment for counsel and assistance in the preparation of the booklet is paid to the Southern California Horticultural Institute, a civic group composed of landscape architects, nurserymen and others.

Of course, the bank offers F. H. A. loans for those interested in landscaping a home, but that does not appear until the last two pages of this admirable booklet.

BULLETINS RECEIVED.

Methods formerly used for the removal of leaves from rose plants at the time of digging, as well as a new procedure through the agency of ethylene gas, are described in bulletin 386 of the Oregon agricultural experiment station, Corvallis, entitled "The Removal of Leaves from Rose Plants at the Time of Digging," by John A. Milbrath, Elmer Hansen and Henry Hartman.

"Propagation of Fruit Plants" by C. J. Hansen and E. R. Eggers, circular 96 of the California agricultural extension service, Berkeley, describes generally the various methods of vegetative propagation of fruit plants grown in California. The last quarter of the 60-page pamphlet describes briefly ways of propagating subtropical fruits grown in that state.

Items You May Need

- 500 Birch, Cutleaf Weeping, 8 to 10 ft.
- 200 Birch, Cutleaf Weeping, 1 1/2 to 1 3/4-in.
- 1,000 Elm, American, 8 to 10 ft. (root pruned 1939)
- 700 Elm, American, 1 1/4 to 1 1/2-in. (root pruned 1939)
- 150 Ginkgo, 5 to 6 ft.
- 200 Ginkgo, 6 to 8 ft.
- 175 Ginkgo, 8 to 10 ft.
- 50 Ginkgo, 1 1/4 to 1 1/2-in.
- 300 Maple, Norway, 2 1/4 to 3-in.
- 1,000 Maple, Norway, 3 to 3 1/2-in.
- 800 Maple, Norway, 3 1/2 to 4-in.
- 2,000 Maple, Norway, 4 to 4 1/2-in.
- All Maple transplanted, 7x7 ft.
- 500 Willow, Thurlow, 8 to 10 ft.
- 400 Willow, Thurlow, 10 to 12 ft.
- 250 Willow, Thurlow, 1 1/4 to 2-in.
- 1,000 Juniper, Pfitzer's 18 to 24 ins. Sheared, compact.
- 800 Juniper, Pfitzer's 2 to 2 1/2 ft. Sheared, compact.
- 300 Juniper, Pfitzer's, 2 1/4 to 3 ft. Sheared, compact.
- 9,000 Montmorency Cherry, 1-yr., 1/2-in.
- 14,000 Montmorency Cherry, 1-yr., 3/4-in.
- 5,000 Montmorency Cherry, 1-yr., 1/2-in.
- 1,300 Montmorency Cherry, 1-yr., 3/4-in.
- 8,000 Elberta Peach, 1/2-in.
- 13,000 Elberta Peach, 3/4-in.
- 5,000 Elberta Peach, 18 to 24 ins., strong

A general list of other stock.

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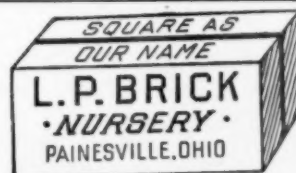
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Coming Events

LOUISIANA PROGRAM.

On the second day of the convention of the Louisiana State Horticultural Association, at the Heidelberg hotel, Baton Rouge, May 19 and 20, nurserymen will gather at a luncheon meeting. In the afternoon, while the florists are holding a retail design school, growers will hear talks on "Azaleas and Camellias," by Dr. W. D. Kimbrough; "Ornamental Horticulture," by Dr. D. L. Gill, and "Plant Disease and Control," by Dr. E. O. Eddy, all of Louisiana State University.

FLORIDA PROGRAM.

The nurserymen's section of the Florida State Florists' Association has a group program for Monday and Tuesday afternoons, May 19 and 20, arranged by M. J. Soule, St. Petersburg, vice-president of the group. On the first day Dr. R. V. Allison, of the University of Florida, will speak on "Soil and Plant Relationships" and conduct a round-table discussion. On the second day, Jack Holmes, Tampa, will give an illustrated talk on "Proper Frost Protection of Ornamentals" and L. M. Maxwell, of the Swift Fertilizer Co., will give a talk illustrated in colors on "Some Insects and Diseases Affecting Ornamentals." The session will close with a discussion of possible extension activities led by M. J. Daetwyler, Orlando.

GARDENERS' CONVENTION.

Detroit, Mich., has been chosen for the thirty-first annual convention of the National Association of Gardeners. This will be held under the auspices of the Detroit branch, August 19 to 21, at the Book-Cadillac hotel.

Membership of the N. A. G. is made up of professional gardeners, i. e., superintendents, head gardeners and assistant gardeners of estates, parks, cemeteries and college grounds, with a large associate membership composed of men and women engaged in any business pertaining to gardening.

The Detroit convention committee, with Nelson Frolund acting as

general chairman, is going ahead with plans to make the 1941 convention an outstanding one in every way.

Tom Pearson,
Publicity Chairman.

NEWARK ROSE FESTIVAL.

By proclamation of Mayor Charles H. Davis, this year's festival of roses at Newark, N. Y., is to run from June 15 to July 7. Last year 55,000 persons per week are reported to have visited the city during the festival. The fields of Jackson & Perkins Co. will exhibit a pageant of bloom at the height of the spring rose season. Through the Newark chamber of commerce, citizens have been provided with rosebushes for their gardens, so that the entire city will be colorful. The principal highway approaches to Newark have been planted so that their streamers of color will lead the motoring visitors to the rose fields to see their spectacular array, as well as to examine the new varieties in the trial grounds.

ARBORETUM TOURS.

The first of the 1941 outdoor lecture tours of the Morris Arboretum of the University of Pennsylvania will be held May 17, with the topic, "Seasonal Interest at the Arboretum," and the leader Dr. Henry T. Skinner, curator of the arboretum. Plants for special discussion will include many species of azaleas, crab-apples, deutzias and honeysuckles, lilacs and rock wall collections.

Later tours will be held June 7, on "Trees and Shrubs for Landscape Effect," led by Dr. Ralph W. Curtis, professor of ornamental horticulture, Cornell University; June 21, on "Pests and Diseases of Woody Plants," led by Dr. Ephraim P. Felt, director of the Bartlett tree research laboratories, Stamford, Conn., and October 11, on "Tree and Shrub Maintenance," led by Dr. Harlan H. York, professor of botany in the University of Pennsylvania.

While the tours are chiefly designed for amateur gardeners, others are cordially invited to attend. There is no charge. The tours commence at 2 p. m., Saturday, lasting about two

hours, and commence at the administration building, Meadowbrook lane and Stenton avenue, Chestnut Hill, Philadelphia, Pa.

ROSE SOCIETY MEETING.

The semiannual meeting of the American Rose Society will be held at Reading, Pa., with headquarters at the Abraham Lincoln hotel, June 13 and 14, according to R. Marion Hatton, secretary. The registration fee will be \$4.

After registration on the first morning, there will be a view of the rose show from 10 to 12 noon, followed by luncheon at the hotel. In the afternoon will be held a round-table discussion, with short talks by prominent rosarians. In the evening an informal banquet will take place at the Reading Country Club, at which the speakers will be Dr. J. Horace McFarland and Dr. Charles V. Covell.

Saturday morning, June 14, members will visit the gardens of Treasurer C. R. McGinnes and, after luncheon at the hotel, they will witness the dedication of the municipal rose garden in the city park. Later the guests will be conducted on a tour of the city.

Those who wish will leave at 8 a. m., June 15, for a visit to the Hershey rose garden.

SAN FERNANDO ELECTION.

The San Fernando valley nurserymen's division of the Southern California Horticultural Institute met May 5 at the Green Grill, on Ventura boulevard, near Los Angeles, Cal. A discussion of ways and means of raising standards of quality and service to valley gardeners took place.

New officers taking charge at the meeting included W. Kenneth Davis, of the Aurora Nursery, Glendale,

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WASHINGTON NOTES.

The Washington state department of highways has completed plans to beautify the approaches to the city of Puyallup. The approaches to the tunnels that lead to the pontoon bridge across Lake Washington, Seattle, are also being planted. Bids on the project at Raymond are to be opened shortly.

The United States Forest Service will plant 2,616,000 trees in Washington and Oregon this spring, H. L. Plumb, supervisor of Snoqualmie national forest, announced recently. Of these, 300,000 Douglas firs will be planted near Skykomish in Snoqualmie national forest; 10,000 ponderosa pine seedlings in the Nile Creek area of the forest; 852,000 trees near Oakridge, Ore.; 500,000 seedlings in the Mount Hood national forest, and 485,000 seedlings in the Olympic national forest. Seventy-five per cent of the planting will be done by the Civilian Conservation Corps workers.

Seattle gardeners' activity is concentrated on established homes, instead of the new homes being rushed to completion nowadays. A survey indicates that the builders of new homes place their last cent on construction and nothing is left for landscaping.

W. L. Fulmer.

THE new nursery store of C. J. Daily & Sons, one and one-half miles west of Camarillo, Cal., was opened recently. Varieties of citrus, avocado and walnut trees are handled, in addition to shrubs and plants.

FIRE of unknown origin swept through several acres of evergreen and forest trees and shrubs on the premises of the Northern Seed & Nursery Co., Ipswich, S. D., recently, causing damage estimated at several hundred dollars.

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Diseases of Trees

Gleanings from the Latest Reports of Scientific Research

By Leo R. Tebon

FUSIFORM RUST OF PINES.

Besides the imported blister rust disease of white pines to which so much attention has been given in northern states, there exist in various parts of the United States other rust diseases of pines, native American diseases, each of which in some measure causes injury or destruction of trees. In southeastern United States the most important of the native pine rust diseases is that known as fusiform rust or fusiform rust canker, the cause of which is a fungus known as *Cronartium fusiforme*.

This fusiform rust has been known to occur in pine nurseries in southern states since 1937. Since that year it has been the subject of annual surveys conducted from the federal government's southern forest experiment station at New Orleans, La., and the results of these surveys have just been made available in a report by Howard Lamb, conservationist, and Bailey Sleeth, assistant pathologist.

Slash pine, *Pinus caribaea*, and loblolly pine, *P. taeda*, are the two pine species most susceptible to infection. Where these two species stand together, so that comparison can be made, slash pine appears more susceptible than loblolly. Under most circumstances longleaf pine, *P. palustris*, is relatively resistant, as is indicated by the fact that stands with more than ten per cent of the trees infected are reported rarely, while in the majority of stands less than five per cent of the trees are infected. Shortleaf pine, *P. echinata*, is likewise highly resistant; in fact, no instance of infection of this species has yet been observed.

In nurseries fusiform rust infection is particularly important, for tree mortality is highest in the seedling stage and in young stands and least in mature stands. When seedlings become infected in the nursery they are considered a total loss because, if transplanted in the field, they die within a few years. Young seedlings and saplings, especially of slash pine, with trunk infections either die as

a result of the infection or are so badly damaged as to be worthless.

In the survey of nurseries, it was found that losses from fusiform rust infection were greatest through a region including approximately the southern half of Alabama and Mississippi. In several nurseries examined, from fifteen to thirty-five per cent of the slash pine seedlings were infected. Also in several nurseries from ten to fifteen per cent of the longleaf pine seedlings were infected, and the direct loss amounted commonly to from two to five per cent.

Outside of the above-named region, nursery losses have been less severe. However, in the years 1938 and 1939 the disease was generally more severe in nurseries than in 1937. It is thought that conditions for seedling infection were less favorable in 1937 than in the two succeeding years. However, the increase in numbers of oak trees in the south may also have increased the possibilities for pine infection.

The fusiform rust, like other pine rusts, requires an alternate host for the completion of its life cycle and it makes use of various oak species. The form of the rust on the pine represents the same life history stage as occurs on white pine in the case of the white-pine blister rust, and the form on oaks corresponds to the white pine form on ribes.

The susceptibility among oak species varies from very high to very

low. Black oaks are, as a class, more susceptible than white oaks. Most highly susceptible to infection are the water oak, *Quercus nigra*, and the willow oak, *Q. phellos*. These two species are considered to be the most prolific producers of spore material capable of infecting pines. In decreasing order of susceptibility stand the laurel oak, *Q. laurifolia*; black-jack, *Q. marilandica*; bluejack, *Q. cinerea*, and southern red oak, *Q. rubra*. The turkey oak, *Q. catesbaei*, appears quite resistant. The white oaks of the region, *Quercus alba*, *Q. stellata* and *Q. virginiana*, usually do not become infected.

As a native disease the fusiform rust attacks, and is especially familiar to foresters on, slash pine, loblolly pine and longleaf pine. It causes the development of elongated, spindle-shaped cankers on branches and stems of seedlings, saplings and large trees. By the shape of the canker, it is readily distinguished from the eastern gall rust of pines, which causes the formation of large, spherical galls on stems and branches, but occurs infrequently and then chiefly on shortleaf pine within the range of the fusiform rust.

The natural range of the fusiform rust has for its northern boundary a line beginning near the northeastern corner of North Carolina and sloping southwestward across northern South Carolina, Georgia, Alabama, Mississippi, through southern Arkansas, northwestern Louisiana and eastern Texas nearly to the Gulf of Mexico. Southward, its range runs along the coast of the gulf and extends through about half the length of Florida, the southern part of this state being free of the disease. On the north, the west and the extreme south of its range, fusiform

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rust attacks perhaps less than one per cent of the pines in natural stands, but in the central part of its range more than eighty per cent of the trees in certain local areas have been infected.

Heaviest infection and losses have been observed in southeast Louisiana, southern Mississippi and southern Alabama. In this region most of the stands of loblolly and slash pines had from twenty to fifty per cent of the trees infected and only occasional stands were infected to so small an extent as ten per cent.

Eastward, in Georgia, northern Florida and South Carolina, stands of slash and loblolly pines were infected over a range of one to fifty per cent, with an average of from five to thirty per cent.

Older trees, the trunks of which have become infected, may continue to live for a number of years after infection has occurred. Although the trunks on such trees may be severely injured by the rust canker, the trees frequently grow almost as well as uninfected trees. However, such trees frequently break over during windstorms. The effect of trunk cankers seems less serious on loblolly pine than on slash pine.

Commercial significance of the fusiform rust canker is determined by many factors, including the age of a stand, the intensity of infection, the number of trunk infections and necessary practices in management and utilization. Losses that would, for example, be negligible or perhaps even beneficial in heavily stocked natural stands prove serious in plantations where, with fewer trees, the loss of any considerable number results in understocking. Likewise, cash loss can be reduced if infected trees are salvaged for pulpwood when stands are thinned or improvement cuttings are made.

Adequate control of the fusiform rust depends chiefly on the prevention of infection in the nursery and on the removal of cankered branches from young trees in the field before infection extends to the trunks.

Prevention of nursery infection requires a combination of two procedures, late sowing and early and thorough spraying. Seeding should be done as late as possible without endangering the economical production of plantable stock. The exact date for planting should, however,

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Research Specialist in Diseases of Ornamental Plants, New Jersey
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The book, in two parts, considers the problems with which the person entrusted with the care of trees is confronted. The chapter headings in Part I are:

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| III. TRANSPLANTING TREES | VIII. TREES SUITABLE FOR STREET AND ROADSIDES |
| IV. FERTILIZERS AND THEIR USE | |

The chapter headings and some of the main subheadings in Part II are:

- IX. DIAGNOSING TREE TROUBLES
- X. NON-PARASITIC INJURIES
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About the Author

Dr. Pirone is one of the outstanding pathologists of ornamental plants in the United States. He is editor of the monthly publication "Nursery Disease Notes," which is widely used by tree men and nurserymen. He is secretary of the New Jersey Association of Nurserymen and a member of the research committee of the National Shade Tree Conference. He has published more than a hundred technical and popular articles and bulletins on tree and ornamental plant problems in the last three years.

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be determined by the individual nurseryman in terms of his own experience in his location. Spraying should start as soon as the burlap or cover is removed from the seedbed and should be continued until the first of June. During this period at least one spray application should be made each week. Also, in nurseries where from past experience a heavy rust attack is expected it is advisable to spray the burlap or seedbed cover at least once between the time when seedlings emerge and the cover is removed and to follow this treatment with sprays at intervals of three or four days for the first three weeks after removing the seedbed cover.

For the spraying of seedlings in beds, 4-4-50 Bordeaux mixture is recommended. The mixture should, preferably, be homemade and should have added to it a good sticker and spreader. Liquid Santomerse, used at the rate of one pint to 100 gallons of spray, has proved satisfactory as a spreader and sticker. So, also, has a mixture of six pounds of raw linseed oil and six pounds of fish oil emulsified in six pints of water and added to 100 gallons of spray. Either fish-oil soap or casein spreader can be used, also, at the rate of three pounds to fifty gallons of spray.

Spraying must be done thoroughly. It is necessary to cover all portions of the seedlings with the spray. Consequently, it is desirable, whenever possible, to use a power sprayer and to apply the spray with the highest pressure the sprayer is capable of supplying safely. Fungicidal dusts, so far as present knowledge indicates, do not provide protection against infection by this rust.

In the control of other rust diseases, eradication of the alternate host has been advocated and practiced. Eradication of oaks from territory surrounding nurseries for the control of this rust is not advised. At one nursery the establishment of an oak-free zone 1,500 feet wide, while reducing infection, failed to provide complete protection. Although destruction of the more susceptible oak species near a nursery should reduce infection somewhat, in most places the protection secured will not justify the cost of establishing and maintaining an oak-free zone unless sale of the oak logs for firewood, posts and saw logs can be made to pay a substantial part of the cost.

L. R. T.



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ELDERS IN NORTHWEST.

The genus sambucus, called elder or elderberry in some parts, comprises about twenty species, of which but a few are in cultivation, though they are widespread over the northern part of the continent according to their degree of hardiness. There are fourteen species and subspecies growing at the Dominion experimental station at Morden, Manitoba. A few are tender, but most of them are adapted to conditions there. The red-berried elder is native to Manitoba and the black-fruited Sambucus melanocarpa to southwestern Alberta.

The European elder, Sambucus nigra, usually with five leaflets, has black fruit, which is used medicinally and somewhat in cookery. The two forms most employed on the prairies are the golden European elder, variety aurea, and the cutleaf European elder.

The American elder, Sambucus canadensis, usually with seven leaflets, is the common elder of the eastern portion of the country. Its dark purple fruit is widely used for making pies and wine. One form has red fruit and golden-yellow foliage. The great elder has large leaves and flat flower heads which may have a diameter as much as eighteen inches.

The European red elder, Sambucus racemosa, is the most widely planted species on the prairies. It blooms early in spring and is luxuriant with innumerable clusters of scarlet berries, which liven the shrubby border from July until frost in autumn. Subspecies include plumosa, plumosa aurea and laciniata. Plumosa has feathery foliage, deeply cut into long narrow teeth. The golden-leaved form is less feathery, but promises value as a source of golden-yellow foliage color. Laciniata produces

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deeply dissected leaves. A seedling produced at Morden from seeds gathered from the common type is shapely in bush and deeply serrated in leaf; it is known as Redman. The European red elder is used somewhat for jelly making. For full fruitfulness it

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is often necessary to have at least two seedlings growing as neighbors.

The red-berried elder, Sambucus pubens, is coarser in leaf and bush

than the European red, has a looser flower head, which is somewhat purple-tinted, and branches and leaves more or less pubescent. It is native over a considerable part of Manitoba. The American elder is found sparingly in the southeastern part of the province.

Sambucus melanocarpa is a black-fruited species of British Columbia and southwestern Alberta. It is not well known in landscape work.

Elders are notable for their rapid shoot growth, the variety of form and season of bloom, the range in shape and color of foliage and the effect produced when loaded with their small berries.

ARIENS TRACTORTILLER.

An implement to do a complete job of fitting the soil in one operation after previous plowing is announced

to the trade under the trade-mark Ariens Tractortiller by the Ariens Co., Brillion, Wis. The illustration



New Ariens Tractortiller.

here shows it in use behind a tractor. In operation the revolving tines thoroughly mix and aerate the soil, so that it is evenly mixed and shredded, with no large chunks to retard seed growth and no plow sole. It does a complete operation of harrowing, disking, packing and leveling the soil. The machine has a cutting width of sixty-six inches, eliminating any compacting from the tractor wheels, leaving the soil in a uniformly tilled condition throughout. It is drawn by a tractor and operated by power take-off.

SECURITY LAW CHANGES.

While defense problems will postpone any changes in the federal social security law by Congress, the probable direction of such developments is indicated in the recent report of the social security board, in which the following paragraphs appear:

"Federal old-age and survivors' insurance, the board believes, might well bring in most of the major occupations still excluded—agricultural and domestic work and that in non-profit, educational and charitable organizations.

"In unemployment compensation, the board also suggests certain extensions of coverage as far as possible. It also believes that the federal unemployment tax, now levied on employers of eight or more persons, might well apply to employers of one or more. At the end of the fiscal year, twenty-six state laws covered smaller concerns, and of these eleven covered employers of one or more. Such a change in the federal tax would have the added advantage of bringing employer reporting un-

der this system in line with reporting under old-age and survivors' insurance.

"For consideration as possible steps toward more nearly adequate unemployment protection, the board suggests certain changes in state laws: (1) To reduce the waiting period to one week; (2) to establish a minimum benefit of at least \$5 a week for total unemployment; (3) to increase the maximum weekly benefit, now fixed at \$15 a week in most states; (4) to increase the weekly benefit rate, which in general does not exceed fifty per cent of wages, in contrast to the usual rate of sixty-six and two-thirds per cent under state workmen's compensation laws, and, in particular (5) to increase the duration of benefits. In addition, the board recommends payment of benefits for partial unemployment in the states which now have no such provision. This includes two of the large industrial states—New York and Pennsylvania."

SITUATION WANTED

Experienced budder, college graduate in horticulture, 24, single, car, wants pecan, walnut or other budding with nursery for summer season. Write what you have and rates offered.

Lewis C. Walker, Horticulturist, Lampasas, Tex.

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Established nursery, 35 miles from San Francisco, wants reliable nursery salesman who thoroughly understands the business; also with knowledge of floral designing; middle age, married, good personality; meet public. Good opportunity for right man—one that will show an interest in his work; no others need apply. Write full particulars and references in first letter. Address No. 184, care of American Nurseryman.

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Ambitious man, age 25 to 30, as working foreman to handle mixed growing of perennials and greenhouse stock on small retail place. Must be familiar with landscape work. Address No. 183, c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

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CHERRY ROOT GRAFTING EVADES LEAF SPOT.

In seeking to combat the destruc-
tive leaf spot disease of cherry nurs-
eries, investigators of the United
States Department of Agriculture
have been able to kill two birds with
one stone. By propagating cherry
trees by piece root grafting, instead
of the usual method of budding, they
have eliminated a season of costly
spraying in the nursery and at the
same time obtained greater winter
protection for the tender root, as the
graft union itself is about three inches
underground.

In piece root grafting a scion or
piece of stem of the desired variety
is grafted onto a piece of seedling
root three or four inches long. In
bud grafting, a bud of the desired
variety is inserted into the seedling
stem after it has grown in the nursery
for one season, during which the
foliage is exposed to attacks of leaf
spot. Because of ravages of the leaf
spot disease, most nurserymen have
considered it inadvisable to use, in
their bud grafting of cherry trees, the
Mazzard cherry stock used in the de-
partment experiments.

Discouraged in their attempts to
secure satisfactory control of the leaf
spot disease in the nursery without
numerous costly spray applications,
the investigators—E. A. Siegler and
J. J. Bowman, of the bureau of plant
industry—turned to the method of
propagating cherries by piece root
grafting. This method has long been
employed for apples and, in fact, was
used for cherries over forty years ago.
At that time it was abandoned by the
relatively few nurserymen who tried
it because of poor stands. Results now
indicate that with careful handling it
is possible to get satisfactory stands
with piece root grafting, although
several more years will be required to
test this method in commercial prac-
tice.

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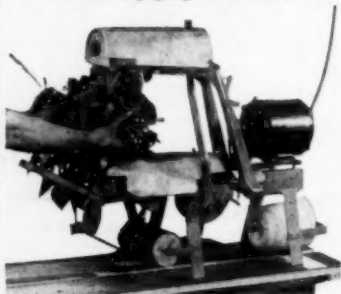
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Kelsey-Highlands Nursery, East Box-
ford, Mass.—Retail catalogue of nursery
stock, including many rarer items, also
lists of plants for special environments, 64
pages and cover, 5x8 inches.

Paul J. Howard's California Flowerland,
Los Angeles, Cal.—Retail planting list
offers flowering plants, roses, nursery stock
and seeds, illustrated, partly in color, 52
pages and cover, 8 1/2 x 11 inches.

Edgar L. Kline, Lake Grove, Ore.—
Wholesale price list of lily and miscel-
laneous bulbs, 4 pages, circular form, 5x9
inches.

E. D. Robinson, Wallingford, Conn.—
Wholesale price list, handled as sales agent
for several eastern nurseries, 8 pages,
5 1/2 x 8 1/2 inches.

Willis Nursery Co., Ottawa, Kan.—
Wholesale price list, dated April 24, of
nursery stock in storage, 6 mimeographed
pages, 8 1/2 x 14 inches.

Lake's Shenandoah Nurseries, Shenan-
doah, Ia.—Wholesale bulletin No. 3,
dated April 28, offers complete line of
nursery stock, 48 pages and cover, 6x9
inches.

Mount Arbor Nurseries, Shenandoah,
Ia.—Wholesale bulletin for May of gen-
eral assortment of nursery stock, 32 pages,
6x9 inches.

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Some crossword puzzles are child's
play compared to occasional orders
that reach nurserymen. An example
is the following letter which came
into the office of the Bay State Nurs-
eries, North Abington, Mass., last
month and incidentally, says Luke C.
May, was filled to the customer's
satisfaction:

I have order 8 rambles with you have
got the names there. I'm short of 4 trees,
that which you haven't got. Send me (2)
3 to 4 feet and (2) 18 to 24 inches. Any-
thing that don't run over the amount that
I will pay for. I must have these four
to complete the job. Don't send anything
except red cedar I don't want them any
more.

C. E. PERKINS & CO., West
Hartford, Conn., have leased a build-
ing in the former New Departure
establishment at Elmwood. The build-
ing contains about 1,000 square feet
of space and will be used for storage
and a suboffice.

E. C. MORAN, Medora, N. D.,
reports the largest volume of business
he has ever done in collecting forest
tree seeds and native plants, and says
indications are favorable for the con-
tinuance of this good fortune. He
expects to open a branch collection
station in Alberta, Canada, this sea-
son and he will make a personal trip
through the subarctic bush country
of Canada during the summer to
search for new plant materials for
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